American Engineer

Professional Engineer

MARCH 1959

At Pittsburgh School: Secretaries Being Trained As Engineering Assistants. Page 27.

• • •

Ohio Consultants and the Work of Their Functional Group. Page 31.

• • •

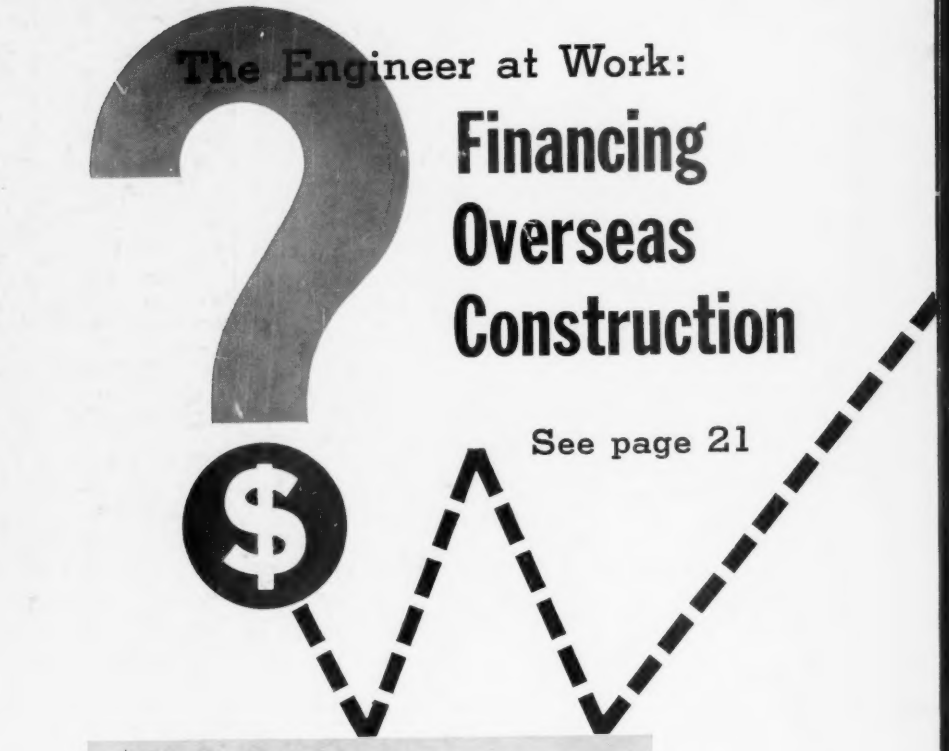
AND All the News About Engineers in:

- *Consulting*
- *Education*
- *Government*
- *Industry*

The Engineer at Work:

Financing Overseas Construction

See page 21



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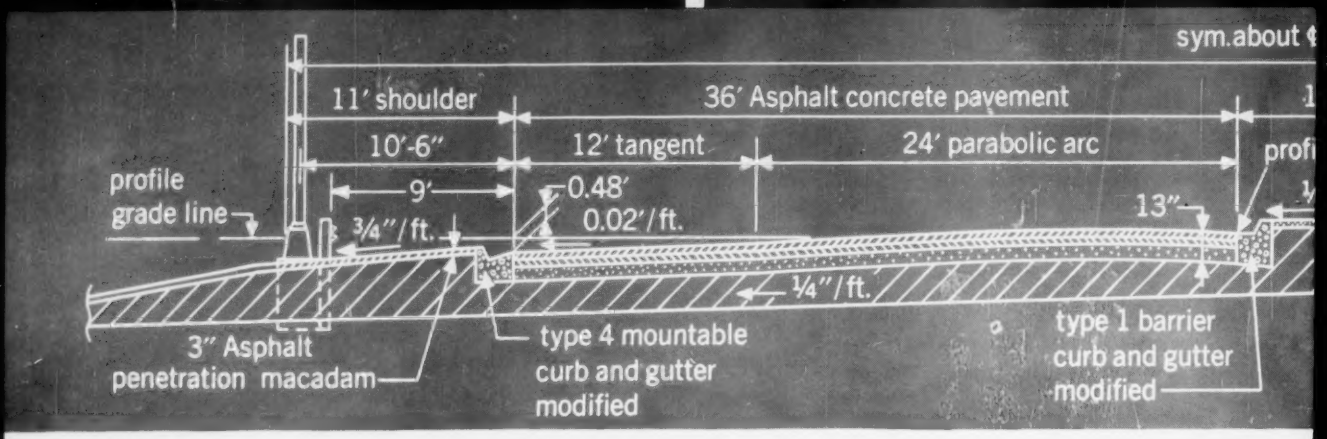
To lay Asphalt concrete on bridge decks in winter the contractor used three, 12-foot finishing machines. By paving simultaneously cold longitudinal joints were prevented. Finishers were followed immediately by 2-and-3-axle tandems.

One-inch binder course is compacted by tandems. Self-propelled pneumatic-tired roller ballasted with ten tons of sand complete compaction. Ordinary household detergent in water prevented Asphalt pick-up by rubber tires of the heavy equipment.



Chicago's Calumet Skyway proves it!

Modern, durable, Asphalt paving

Paving of the Windy City's 7.7 mile Calumet Skyway; an elevated, twin-36-foot-lane toll facility; started in October 1957. By April 16, 1958...just six months later...it was opened for traffic.

Mind you, the job was done in midwinter and had to be paced to the completion schedules of fill and bridge sections.

It is safe to say that when laid down in midwinter at this speed only modern Asphalt concrete construction could have satisfied the engineering standards for this pavement structure. Competitive bidding established that Asphalt concrete was also the least expensive material.

To the direct construction savings, resulting from the speed and low cost of Asphalt paving, must be added extra revenue realized by the ability to open this toll facility in time for 1958 summer traffic.

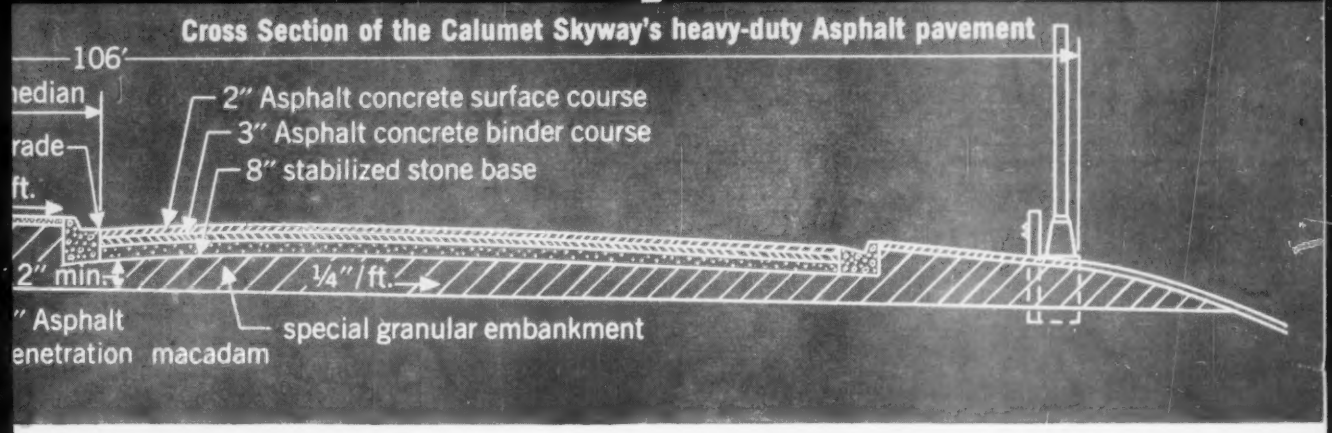
The road's designers point out that modern Asphalt construction also provides the desired durability, minimum maintenance, minimum traffic noise, fast melting of snow and ice with no trouble from deicing salts.

Asphalt concrete is easily the most versatile paving material.

In this example Asphalt concrete proves out on 18-foot

Specially-equipped trucks bring mix to finishers. Insulated truck beds and tarpaulin covers protect mix, bring it to job at best laying temperature. Canvas aprons on spray bars of distributors keep prime from blowing on curbs and sidewalks.

Before and after rolling, luteman, raker and straightedge man check the mat. Despite 2-inch high expansion and contraction plates every 100 feet, mat goes down true to grade. A 13-20 ton roller irons wearing surface to final smoothness.



is done at record, tax-saving speeds

fill and on bridge decking. In Louisiana it is performing well over virtual quagmires. In Ohio, it proves ideal on glacial till. In New England, it has taken years of alternate freezing and thawing in its stride. Along Oregon's rainy coast Asphalt concrete is the only paving that lasts. In the Southwestern desert regions, where eggs can be fried on road surfaces, Asphalt concrete is by far the preferred pavement. In mountainous terrain, Asphalt concrete is the easiest material to lay and it conforms to foundation settlement without fracturing. In New Jersey, it was selected to handle the world's heaviest turnpike traffic loads ... 4,012,815 vehicles in July 1958 alone.

Under all these conditions and more, modern Asphalt concrete has proved itself the least costly pavement to build and to maintain. When you specify it, you make your state's road-building tax funds go **much** further.

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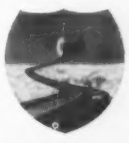


THE ASPHALT INSTITUTE
Asphalt Institute Building, College Park, Maryland

Letters to the Editor

Fluoridation . . .

► ***Editor's Note:*** **The article in the January AE, "The Engineer's Role in Fluoridation" has elicited many letters to the magazine, an objective sampling of which appears below:**

Dear Editor:

"The Engineer's Role in Fluoridation," by H. Romer and S. C. Martin, which appeared in the January issue of the AE, is excellent.

H. A. PACE
Chairman-Elect,
Akron, Ohio, Section,
American Chemical Society

Dear Editor:

The article on "The Engineer's Role in Fluoridation," in the January issue of the AE goes far beyond the title. It presents one side of a controversial subject nicely presented as an engineering problem and possible solutions.

As an example, on page 21 under a heading "Safety" we read the following: "Water fluoridation could not reasonably be advocated if its dental benefits were derived at the expense of health elsewhere in the body. Extensive studies by physicians, dentists, roentgenologists, toxicologists and epidemiologists conclusively demonstrated that persons consuming approximately 1.0 ppm F- in their water supply showed no increase whatsoever in any illness or disability."

This statement sounds well because it includes a number of words intended to impress the reader but not one shred of evidence is even outlined to substantiate it.

As a reader of the AE, I hope this type of article which mixes propaganda with technical details will not appear very often.

HERMAN H. REUTER, P.E.
Clifton, N.J.

Dear Editor:

Please advise if reprints are available for the article on "The Engineer's Role in Fluoridation" by Harold Romer, P.E. and Sylvan C. Martin, P.E. . . .

R. M. MCLAUGHLIN, P.E.
Director, Division of Environmental Sanitation,
Dept. of Health,
County of Westchester,
White Plains, N.Y.

Dear Editor:

The article "The Engineer's Role in Fluoridation," handles the mechanical problems of introducing fluorides in drinking water extremely well. It should do much toward informing engineers of the methods of safeguarding the public against overdosage.

However, as a professional engineer, I feel this is as far as the article should have gone. Editorializing on the merits of fluoridation has no place in our professional publication. The data supporting the claims of fluoridation in the article were certainly impressive; however there are no doubt, equally impressive data available from equally qualified people which can show otherwise.

Be this as it may, when we attempt in our engineering journal to support or not support any issue which is a matter for each individual to decide for himself, I believe we are betraying the trust in our profession.

I do not wish to argue here for or against the merits of fluoridation, but since the editor has apparently taken a stand with Messrs. Romer and Martin endorsing fluoridation of public water, I feel it my duty to point out a very important fact which is easily overlooked. This is the right of freedom of choice. How quick we are to point this out when an attempt is made to unionize our profession! As professional people we are justifiably jealous of our right to think and act for ourselves. Does it not seem inconsistent in this case to force the thinking of one group on another through public works and at public expense?

In many areas this action is taken without a vote from the people and lending the dignity and support of our engineering profession to fluoridation

"We're not particularly worried about any future engineering shortage."

cause as you have done however unwittingly, bespeaks paternalism rather than an effort to inform.

Let's stick to facts, such as methods used to meter fluoride, and leave out the opinions, trusting the good judgment of the people.

WM. G. BROSENE, JR., P.E.
Cincinnati, Ohio

Abstracting Services . . .

Dear Editor:

In the column entitled "From Washington" in the January, 1959, issue of AMERICAN ENGINEER, there is a discussion of the program being undertaken in the field of technical information compilation, publication and dissemination. Here we have another example of too little and too late as compared with our Soviet competition. Through the influence of private organizations, an advisory committee has capitulated and accepted an unsatisfactory program. A recent study has shown that we can purchase from Russia abstracts prepared by their abstracting service, translate them into English, and get them into the hands of the American scientist in considerably less time than we can undertake the job of abstracting the original Russian articles and publishing them in English. To continue to rely on our existing lackadaisical abstracting services is obviously an absurdity.

The cost of an adequately strong central agency is certainly enough to stagger the imagination. However, the cost of unnecessarily duplicating research and investigation because of lack of knowledge of the work of others is infinitely more expensive. It is not only the cost of the investigations themselves but, also, the cost of many ensuing supply and production programs which would, in general, be saved by a few weeks advance technological development. The cost of abstracting 100,000 journals is truly prodigious, but the cost of delay in getting those abstracts to American scientists may well be far greater.

CARL C. CHAMBERS, P.E.
Vice President for
Engineering Affairs,
University of Pennsylvania,
Philadelphia, Pa.

P.E.'s Can Spell! . . .

Dear Editor:

Professor Miller's article on "The Classics of Engineering Literature" in the December issue strikes me as a first-class piece, for the practicing engineer, for the student of engineering, and for all others (including professors of non-engineering English!)

In addition to being good as a pro-

motional piece, to promote the use of lucid, grammatical, *and* accurate writing, it takes away some of the sting of the canard that "the hallmark of the engineer is his inability to spell"—an inability which, to my sorrow, I have at times noted in the AMERICAN ENGINEER itself. . . .

ARON L. MIRSKY,
Assistant Professor
of Civil Engineering,
U. of Connecticut,
Storrs, Conn.

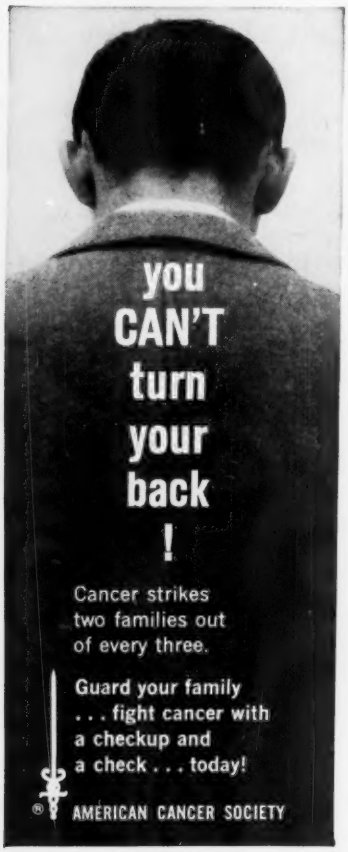
More Miller . . .

Dear Editor:

I thoroughly enjoyed "The Classics of Engineering Literature" by Walter J. Miller in the December issue of the AMERICAN ENGINEER. Let's have more articles of this type.

I wish that Dr. Miller had mentioned Sadi Carnot's "Reflections on the Motive Power of Heat." This book was originally published in 1824, and was reissued by the American Society of Mechanical Engineers in 1943. It was translated by Robert H. Thurston in 1890.

E. J. TAYLOR, Dean,
College of Applied Science,
Ohio University,
Athens, O.



Nursing . . .

Dear Editor:

I was interested in reading the comments made by reader Stuart in his letter to you published in the January issue. I concur heartily with what was printed except for the last sentence. It is on this that I wish to comment.

He states that "In discussing the well worn comparison between engineering and medicine as a profession that he omitted mentioning . . . that technician branch of medicine known as the nurse." Reader Stuart is mistaken in considering nursing as at all comparable with the work of technicians. Nursing is a profession. It might even be said that the profession of nursing is much more parallel to engineering than is the practice of medicine. To point out that nurses are not in the technician category I would cite the following:

In order to practice nursing, nurses must take state board examinations which are administered by boards composed of registered nurses. The state grants each successful applicant the right to use the degree R. N. Nurses are forbidden to practice without passing thorough state boards. The so-called "practical" nurse is definitely limited in the acts she can legally perform. The profession is entirely autonomously and separately organized. It polices its own professional standards. There are certain areas of responsibility which distinguish the nurse from the technician. Her code of ethics makes this very clear. . . .

MERRITT A. WILLIAMSON, P.E.
Dean, College of Engineering
and Architecture,
The Pennsylvania State University,
University Park, Pa.

Plaudits . . .

Dear Editor:

I have just received my first issue of the AMERICAN ENGINEER and would like to say it is an interesting and timely magazine with very good reading material. I enjoy it very much.

EUGENE W. SMITH, P.E.
Dallas, Texas

I think that the articles in the December, 1958, issue were extremely interesting. A well written and edited magazine, too.

PETER WEISSENBERG, E.I.T.
Marblehead, Mass.

I really enjoy your magazine and its organization of material.

JAMES L. RIGGS, P.E.
Bloomfield, Iowa

Your new format is fine.

CECIL BROWN, P.E.
Raleigh, N. C.

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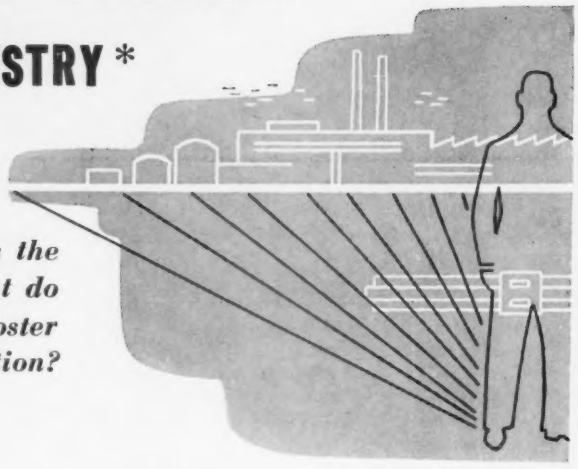
Executive Research Survey Report

CAREER SATISFACTIONS of PROFESSIONAL ENGINEERS IN INDUSTRY*



What do engineers in industry rate as the most satisfying job factors? What do engineers think management can do to foster professional recognition?

You can get specific answers to these questions and many more about engineers in industry in this latest Executive Research Survey report. Based on data gathered from lengthy "depth" interviews, the survey brings out the non-salary career satisfactions of engineers in industry at three stages of professional experience—3 to 6 years, 10 to 15 years, and 20 to 25 years. "Career Satisfactions of Professional Engineers in Industry" is an intensive study of motivation factors in a representative sampling of engineers employed in American industry. Comprehensive statistical analyses—as well as detailed comments by engineers—are given throughout the published report. Use the handy coupon below to order your copy of this valuable addition to your engineering library.

Note These Chapter Titles:

- **Career Outlook of Professional Engineers**
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- **The Question of Professional Status**
- **Are The Values of the More Successful Engineers Different from the Others?**

* Survey made by the Opinion Research Corporation, Princeton, N. J., for the Professional Engineers Conference Board for Industry, in cooperation with the National Society of Professional Engineers.

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American Engineer

MARCH 1959
Vol. 29, No. 3

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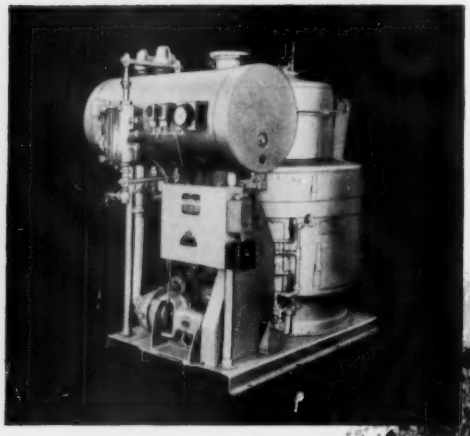

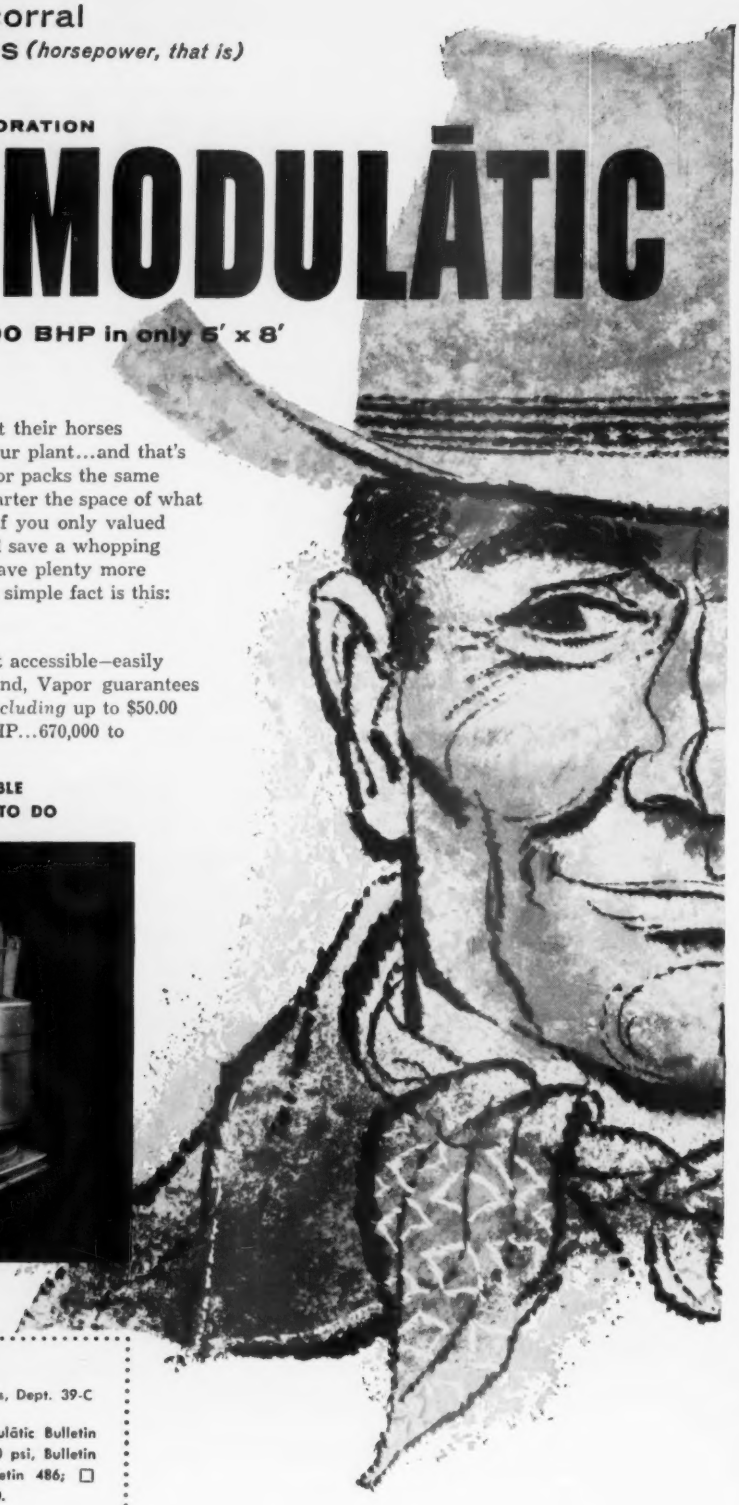

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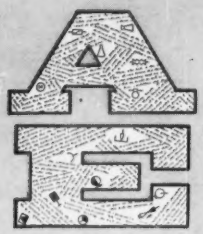

"This Month"

Doing engineering work overseas calls for a new textbook and the man who goes into this area of activity without the proper grounding is asking for trouble. Our "Engineer at Work" piece this month treats this subject under the title "Financing Overseas Construction." Here is a down-to-earth review of intricate government requirements (as well as private) with which one must be conversant if success is to be achieved. The man who writes the story should know whereof he speaks for he is Daniel A. del Rio, former vice president, Hanover Bank of New York, and presently U. S. representative, Banco Nacional de Cuba. (Note: An article worth filing for future reference.)

Lawyers and doctors have long employed secretaries with special knowledge of law and medicine. Now comes the engineer's helper with shorthand book in hand and slide rule in pocket. On page 27 begins a revealing story about a school in Pittsburgh where secretaries are specially trained as engineering assistants.

More and more professional engineering societies are forming functional sections, many among their consultants. See page 31 for a full report of such a group in the Buckeye State of Ohio.

And on page 34 we find the staff piece, "President's Committee Ends Three Years of Study." This unique committee of scientists and engineers winds up its work on a positive note and its activities over the years are of wide import.

News of the Month:

The headlines. Highway Expenditures Reach New High of $17.13 Billion. Newcomb Cleveland Prize Presented. Civil Engineers Opposed to Unions. All on pages 10 and 11.

Consulting. The outlook for retirement bills for self-employed professional and business men is brighter than at anytime in the recent past. See page 12.

Education. Russian and Japanese educators have visited the United States in the past few weeks while a group of Americans have toured the USSR. Learn about respective impressions on page 13.

Government. Lead news story here reports on a meeting of 400 representatives of Federal departments, etc., who came up with the recommendation that professional recruiters will have to be employed if the Government is to get its share of top-talent college students.

Industry. Don't miss "AFL-CIO Meeting Discusses Professional Unionization," page 16. Here is a complete round-up on a meeting held by union leaders recently in Washington to review union efforts to sign up professionals. NSPE comes in for its lumps.

And in the back of the book: A preliminary review of National Engineers' Week, 1959—the biggest yet! Plus other news features.

Kenneth E. Trombley

Editor

Highway Expenditures Reach New High of $17.13 Billion

A new peak in global highway expenditures was reached in 1958 as nations in the free world spent a record total of $17.13 billion on road building, maintenance and administration, according to Robert O. Swain, executive director, International Road Federation, Washington, D.C.

The 1958 roadbuilding total was 14.5 per cent higher than 1957 expenditures, which came to $15.04 billion. 1958 was the eleventh consecutive year in which the free world highway field has shown expansion.

U.S. expenditures, as usual, were the largest of any nation, totaling $9.93 billion, a ten per cent increase over 1957. Total expenditures outside the United States of $7.2 billion show a 19.7 per cent increase over the $5.93 billion spent in 1957.

Leading the world in percentage increase in highway expenditures were Venezuela and Denmark, each of which more than doubled their spending on roads in 1958. Venezuela spent $225.5 million, compared to only $91.5 million in 1957 and Denmark's expenditures were $64.6 million, up from $31.7 million in 1957.

Leading the world outside the U.S. in total highway spending was West Germany, with $1.073 billion, an increase of 21.5 per cent over 1957. Running close behind was Canada, with $1.070 billion, an increase of 21 per cent. Noteworthy is the fact 1958 was the first year any nation outside the U.S. spent more than $1 billion on roads.

This was the first year West Germany topped Canada, which has increased outlay for highways to five times the 1946 level.

The U.S. again was the nation with the most miles of highway in existence, 3,429,801 miles, and the most motor vehicles, 68,398,000. The smallest road network in the world is claimed by the British colony of Gibraltar, which has 17 miles. Gibraltar has a motor vehicle population of 3,321.

One of the trends noted by International Road Federation in 1958 was a definite shift away from toll road construction in the United States. The new Interstate System will either absorb or take the place of the more than 2,000 miles of U.S. toll roads now in existence, they said.

Newcomb Cleveland Prize Presented

The winners of the thirty-first Newcomb Cleveland Prize have been announced by the American Association for the Advancement of Science. They are Jerzy Neyman and Elizabeth L. Scott of the Statistical Laboratory, University of California, for a paper entitled "On Certain Stochastic Models of Population Dynamics."

The $1,000 award of AAAS is presented annually to the author (s) of a noteworthy paper presented on a regular program of the meeting and representing an outstanding contribution to science.

Paul H. Robbins, NSPE's executive director, served on the Committee of Judges to select the winners.

Blind Engineers Hold Conference

The first American technological conference at which blind engineers, technologists, and mathematicians were principal participants and discussion leaders was held recently in New York.

The blind technologists discussed with sighted colleagues such matters as problems of communication, tools for better job performance, mobility, braille, and reading machines.

Conference of Civilian Aides

John W. Beretta, of San Antonio, Tex., chairman of the Texas State Board of Registration for Professional Engineers, and past president of NSPE, is welcomed to a reception at Fort Benning, Ga., for 110 top-ranking military and civilian leaders attending a Conference of Civilian Aides to the Secretary of the Army and Army Commanders by Secretary of the Army Wilber M. Brucker, third from right. Mr. Beretta is civilian aide from the Fourth U. S. Army area. In the receiving line are, l.-r.: Col. Robert H. York, U. S. Army Infantry Center chief of staff; Major Gen. Paul L. Freeman, Jr., commandant of the U. S. Army Infantry School; Secretary Brucker; Gen. Maxwell D. Taylor, Army chief of staff, and Under-Secretary Hugh M. Milton II.

Civil Engineers Opposed to Unions

Civil engineers and unions do not appear to be a very promising alliance, it was generally concluded in a panel discussion at a convention meeting of the American Society of Civil Engineers in Los Angeles, Calif.

But while the concensus of opinion expressed was generally opposed to unionization, one speaker, Arnold Olitt, of Oakland, partner of Woodward, Clyde, Sherard & Associates, said that since his group had only had two and one-half years experience with unions, "it is difficult to state positively how unionization has worked out in our case."

"In general," he added, "our dealings with the union have been amicable."

Mr. Olitt, William W. Moore, of San Francisco, partner of Dames & Moore, and Jack Y. Long, of Oakland, partner, J. Y. Long Co. Associates, served on the panel which discussed "Engineers and Unions—California Report."

"Unless the present labor laws are greatly revised," Mr. Moore stated, "there is little protection offered to any group or employee who prefers to remain unorganized."

With this situation, he continued, all engineers should consider, very carefully, the nature of any organization with which they may become affiliated. He said factors to be weighed should include the degree of member control in the organization, and its policies concerning ethical and professional responsibilities and attitudes.

Mr. Long declared that classifications necessary under a trade union structure tend to specialize work procedures.

"It is my considered opinion," Mr. Long stated, "that specialization, even at the full professional level, lowers the engineer to technician status, with our work too often being directed by others, including nonprofessionals.

"If we recognize that unions have a place in our field of endeavor, how can we define where technical classifications should stop and professional positions begin?

"I have no quarrel with unions. They have done a wonderful job in many fields. In the various trade occupation fields they have provided a real service.

"At this time, after approximately ten years of experience with unions in our profession," Mr. Long concluded, "I am not yet convinced that they have reached the objectives they have offered to their members and to the employers in the field of engineering."

Robbins Talks to Japanese Visitors

NSPE Executive Director Paul H. Robbins discussed the work of the National Society and the engineering profession in the United States recently when a team of Japanese builders, architects, and engineers visited national headquarters. The visitors were in this country for a six weeks' study of the organization and operations of the housing, building, and construction industry in the U.S. The tour was sponsored by the International Cooperation Administration and the program planned by HHFA's International Housing Service. Shown seated are, l.-r.: Atsushi Fujiki; Kahuhei Matsui, and Tadao Miura; standing, l-r.: Yasutaro Okura; David G. Webb, Jr., of HHFA; Yosuke Magara; Mr. Robbins; Shingo Kojima; Harutoshi Fukuzawa, translator, and Masao Yoshida.

WESCON Authors Must Register by May 1

Authors wishing to present papers at the 1959 Western Electronic Show and Convention technical sessions to be held in San Francisco, August 18-21, must register their interest by May 1. Required are 100-200 word abstracts, together with complete texts or additional detailed summaries, which should be sent to the chairman of the technical program, Dr. Karl R. Spangenberg, WESCON, 60 West 41st Avenue, San Mateo, California.

AIChE National Meet Set for Atlantic City

Today's pressing problems, space travel, nuclear energy and Russia's technology will highlight the thirty-ninth national meeting of the American Institute of Chemical Engineers which will be held in Atlantic City, N.J., March 15-18. Dr. Donald L. Katz, president of AIChE, will preside. The meeting is sponsored by the New Jersey and North Jersey Sections of the Institute.

These subjects are among many developments in the chemical engineering profession that will be discussed in symposiums and technical sesssions.

BOOKS

Chemical Process Economics by John Happel, P.E. John Wiley & Sons, Inc., New York, N.Y., publishers.

Economic Operation of Power Systems by Dr. Leon K. Kirchmayer, P.E. John Wiley & Sons, Inc., New York, N.Y., publishers.

How to Become a Professional Engineer by John Constance, P.E. McGraw-Hill Book Company, Inc., New York, N.Y., publishers.

Outlook Hopeful for Retirement Bills

With the first session of the 86th Congress hardly more than two months old, legislation to permit self-employed professional and business men to deduct a portion of their annual income set aside for retirement purposes, has already been favorably reported by the House Ways & Means Committee and readied for prompt floor action. The new bill carries the same identification number as in the past—H.R. 10—and is in the same form as that which passed the House last year. Self-employed individuals may deduct ten per cent of net income, up to $2,500, each year provided the sums are placed in certain types of retirement programs. While self-employed retirement legislation has been popularly referred to as the Jenkins-Keogh bills, after their chief sponsors, the new legislation is now known as the Keogh-Simpson bills, inasmuch as Representative Simpson of Pennsylvania has become the Republican sponsor in place of Representative Jenkins of Ohio who has retired.

In a recent memo to all consulting engineers and firms throughout the country, Leslie C. Gates, chairman of NSPE's Functional Section for Consulting Engineers in Private Practice, has urged renewed active financial support for the American Thrift Assembly in its efforts to have self-employed retirement legislation passed in the 86th Congress and approved by the President. In his memo, Gates acknowledged the generous cooperation received from consulting engineers in the past on behalf of the ATA campaign, and voiced the hope that "your expression of active interest will continue." The Keogh-Simpson bill, Gates continued, "is of special significance to consulting engineers, and since it will operate to your direct financial advantage, it is deserving of your continued support."

Noting that financial contributions from other major professional societies (such as the AMA, ABA, AIA, etc.) to the American Thrift Assembly are expected to at least match theirs of the previous year, Gates declared that continued support from consulting engineers for the ATA and the principle of the Keogh-Simpson bill "will indicate our willingness to stand up, be counted and fight for a program through which we, along with private practitioners in the other learned professions, will derive the greatest benefit."

Out of $3,500 contributed to the ATA by the National Society last year, $2,000 was raised from consulting engineers and $1,500 was contributed directly by NSPE. Within recent months, another check for $2,000 has been presented to the American Thrift Assembly out of sums remaining from last year's contributions. "Consequently," Gates stated, "the Consulting Engineers Keogh-Simpson Fund is now practically depleted, and its replenishment is essential if we are to be able to adequately meet our responsibilities and obligations." Contributions from consultants should be made payable to "NSPE—Consulting Engineers Fund" and mailed to 2029 K Street, N. W., Washington 6, D. C.

In a separate attachment to the Gates memo, Robert C. Vogt, NSPE's representative to the American Thrift Assembly, called upon consulting engineers to also begin an intensive mail campaign in order to inform all Congressmen of the engineers' interest and position with regard to the Keogh-Simpson legislation. "An indication from the 'folks back home' of their support for H.R. 9 and 10," Vogt said, "may well be the decisive factor causing any Representative or Senator to vote in favor of this legislation when voting time arrives."

"So without delay, write to your Representative and Senators telling them of your support for H.R. 9 and 10, and urging that they likewise support these important measures," Vogt concluded.

American Thrift Assembly Names Executive Director

Robert E. Ansheles, of Alexandria, Va., has been appointed executive director of the American Thrift Assembly, according to an announcement by F. Joseph Donohue, chairman of the Assembly.

Mr. Ansheles is a graduate of St. Michael's College, Winooski, Vt., and holds a master's degree from Seton Hall University, South Orange, N.J. From 1946 to 1950 he was assistant professor of sociology and varsity and tennis coach at the New Jersey University. He joined the staff of St. Michael's College in 1950 and was later named assistant to the president of the College. In 1955, Mr. Ansheles was appointed executive vice president of the Greater Vermont Association, Vermont State Chamber of Commerce.

He came to Washington in 1957 as legislative assistant to Senator Ralph E. Flanders of Vermont. The following year he was appointed Congressional liaison officer for the Department of Health, Education and Welfare and served in that capacity until his recent appointment.

◄ Robert E. Ansheles

Appointed Executive Director of Assembly

Russian, Japanese Educators Visit; U. S. Team Tours USSR

- Soviet Education of Sound Quality
- Russians Discuss Own Weaknesses

Engineering educators from Russia and Japan have visited the United States within recent months to gain firsthand knowledge of the engineering profession in this country, while an eight-man mission from the U.S. spent three weeks of study and inspection in the Soviet Union.

One of the major observations of the American group was that engineering education of sound quality is effectively integrated into the planned economy of the U.S.S.R. They also called attention to the dynamic character of Russian engineering education, the continuous process of re-evaluation affecting it, and the ability of this controlled system to adjust to the inevitable variations in personal capabilities at both the student and faculty level.

The mission was sponsored by the American Society for Engineering Education and the National Science Foundation with the cooperation of the Engineers Council for Professional Development. Serving as chairman was Dr. Frederick C. Lindvall, chairman of the Division of Engineering at California Institute of Technology. Prof. Newman A. Hall, head of the Department of Mechanical Engineering at Yale University, was secretary.

Other members were: William T. Alexander, dean of engineering at Northeastern University and president of ASEE; Dr. William L. Everitt, dean of engineering at the University of Illinois and president of ECPD; Prof. Ralph E. Fadum, head of the Department of Civil Engineering at North Carolina State College; Dr. Albert G. Guy, professor of metallurgical engineering at Purdue University; Dr. Ralph A. Morgen, director of the Purdue Research Foundation, and Dr. Leon Trilling, associate professor of aeronautical engineering at the Massachusetts Institute of Technology.

The mission was initiated by the Department of State under an agreement with the U.S.S.R. for the exchange of scientific and cultural delegations.

Members of the U.S. delegation visited twenty-five teaching and research institutions in Moscow, Leningrad, Kuibyshev, and Frunze.

The "return half" of this exchange mission took place when five Russian engineering educators arrived in this country on January 27 for a visit through February 14.

While visiting Northeastern University, Prof. Panteleimon Lebedev, tour leader from the Soviet Ministry of Education, stated that students in the United States do not enter the university at as high a level of education as do their Russian counterparts, nor do they graduate with the same degree of technical background.

He added that he felt American students gained more of their technical background after beginning work in industry itself.

Speaking on the possibilities of establishing exchange student pro-

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grams between Russian and American universities, Professor Lebedev expressed interest in such a program conducted on the graduate level. Although he asserted that the Russian doctorate degree is on a "substantially higher level" than the American degree, the Russian spokesman said the Soviet Union would be interested in sending students to the United States to study under our program leading to a master's degree.

In the Soviet Union, scientists wishing to study for a doctorate must complete five years of college undergraduate work in addition to three years of graduate research at which time they may become candidates for the degree of doctor of science. Only after many years of original research culminating in a thesis of significant scientific contribution, can a scientist achieve the title of doctor. Because of these rigid requirements, the Soviet Union is currently facing a shortage of professors of college engineering.

Asked whether or not Russian engineering students suffer from the same deficiency in knowledge of the liberal arts attributed to American engineers, Prof. Lebedev admitted that a similar problem did exist. To counteract this, he stated that numerous extra-curricular activities in the area of literature and the arts were currently being initiated.

The Russian team visited ten American universities during their visit here.

At a press conference at the Engineers Club in New York City, the Soviet educators discussed weaknesses in Russian engineering education. They stated that there was a shortage of engineers in the electronics and computer technology fields, that there were too many specialities, and that there was not enough freedom of action for educators.

The freedom of action concerned the flexibility granted American educators in the conduct and organization of their courses. This type of flexibility, the Russians said, is now in about sixteen of the Soviet's 200 institutions, but they hoped it would soon be greatly expanded.

A group of eleven Japanese university professors visited recently in the United States for a five-week period. Wilson J. Bentley, professor and head of the School of Industrial Engineering and Management, administered a two-week program at Oklahoma State University. He reported that his staff, as well as the Japanese group, profited from the interchange of information.

The majority of the professors are well-known teaching and practicing engineers with many years of experience. One of the principal interests lay in the American professional and honorary engineering organizations. NSPE President Clark A. Dunn talked to the group during their two-week sojourn at Oklahoma State University. His subject was NSPE and its place in the engineer's life. Don Andrews at Oklahoma City, described the work of the Oklahoma SPE and the technical society, American Institute of Industrial Engineers.

The visit of the "Japanese Applied Industrial Management Specialists Team" was sponsored by the International Cooperation Administration in Washington, D. C., through the Council for International Progress in Management in New York. The objective of the two-week visit to Oklahoma State University was to learn the method by which industrial engineering and management is taught, the content of the curriculum, and the relationship between what the student learns in university and how he puts this learning to practice in industry. As a part of the program, the group visited the Continental Pipe Line Company, Continental Oil Company, the Phillip's Petroleum Company Production Department, the Wilson Packing Company, the Sylvania Electric Company, the American Airlines Overhaul Depot, and the Service Pipe Line Company. At these companies, industrial engineers told the group about typical problems which they were called upon to solve and how this related to the work which they received in university.

Made Trip to Russia

Eight educators from the United States recently visited the Soviet Union to observe their educational program. They included, front row, l.-r.: Dean Everitt; Prof. Hall; Dr. Lindvall, and Dean Alexander; back row, l.-r.: Prof. Fadum; Dr. Morgen; Dr. Trilling, and Dr. Guy.

Linville Named Head Of New York Group

Thomas M. Linville, manager of the Research Service Division of the General Electric Company, is serving as chairman of Electrical Engineers for the New York State Citizens Committee for the Public Schools, Inc., according to an announcement by Ward Melville, chairman of the Committee's Special Advisors.

The New York State Citizens Committee for the Public Schools is an independent, nonprofit, educational organization focusing public attention on public schools throughout the State.

Professional Recruitment Urged for Government Jobs

More than 400 representatives of Federal departments and agencies, attending a meeting sponsored by the Civil Service Commission, were told that the recruitment of top-talent college students for Federal jobs calls for increased used of professional recruiters on the nation's campuses. The Government's first all-agency conference on college recruiting featured panel discussions by college placement officers and industrial recruiters and Government personnel officials.

The industrial panelists stressed the need for presenting clear, concise statements of job offers and facts about the hiring agency, of making early decisions after interviews, and of informing placement officers and students of the decisions. The group stressed that pay is not necessarily the top determining factor influencing career decisions. Most students, particularly those with top talent, are primarily interested in good opportunities to use their talents and training, and in promotional opportunities, the speakers said.

Meanwhile, the Civil Service Commission has launched a nation-wide search for more than 200 college seniors and recent graduates in engineering and science to do research work in key Government laboratories. Those selected will enter the recently-authorized starting rate of grade GS-7 ($5,430). A special written test will be given those considered.

'Man Friday' Plan Inaugurated to Relieve Engineers

Military laboratory and development centers have inaugurated a "Man Friday" plan to relieve engineers and scientists of undue administrative duties, according to a statement before the House Subcommittee on Manpower Utilization by Stephen S. Jackson, Deputy Assistant Secretary of Defense. Jackson said the Department of Defense considers the plan a "priority" one in view of the critical position of engineers and scientists in the Defense research and development work.

The "Man Friday" is usually a college graduate who performs administrative duties for several research teams. The Defense official also cited improvements in morale and effectiveness of the engineering and scientific personnel due to the plan, plus increased contract training and cooperative work-study programs. In addition, each military department has initiated an annual "Science Symposiax" in the interests of better exchange of technical information and recognition of individual technical contributions.

Receives Highway Award

Walter Johnson, right, is shown receiving the second annual Highway Award from *Kansas Construction Magazine* editor, Edward Weilepp, at the Kansas Contractors Association convention recently in Kansas City, Mo. The award is made annually to the man judged to have done the most to advance the cause of better highways in the State of Kansas. A past president of both the Kansas Engineering Society and the Kansas Society of Professional Engineers, Mr. Johnson is chief engineer for the State Highway Commission of Kansas.

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AFL-CIO Meeting Discusses Professional Unionization

- NSPE Blamed for Lack of Progress
- Leaders Urge Unions Contact Students

"Labor and Science in a Changing World," was the theme of a two-day conference held in Washington in early January, 1959, under the sponsorship of the Industrial Union Department, AFL-CIO. Conference speakers dealt with the broad aspects of the technological revolution and its effects on the labor movement, ranging from Walter Reuther's call for the creation of a Labor-Science Foundation, to Paul G. Hoffman's analysis of technological development on the nation's world-wide responsibilities.

Of primary importance to the engineering profession was the panel session of labor leaders, titled, "Meeting the Needs of Scientific and Professional Workers." Under this heading, a representative group of union leaders related their experiences and ideas on organizing white collar employees —with particular emphasis on professional engineers and scientists.

Caesar Guazzo, chairman of the Salary Division of the Electrical Workers, AFL-CIO, opened the discussion with an estimate that the group involved, who are largely unorganized by the unions, numbers 2½-3 million people. He based this estimate on a desire to unionize engineers, associated scientists, and supporting personnel, such as draftsmen and technicians. Guazzo's basic approach to organizing such employees was to recognize that the coveted employees are different from ordinary workers in that they want or expect, in addition to increased income through collective bargaining: (1) prestige, title and position, (2) status and recognition in their profession, (3) attainment of their goals through non-violent, non-controversial means, such as strikes, boycotts, picket lines, etc. He contended that the group involved think of themselves as professionals, but actually are "mere employees," and recommended that the AFL-CIO create an Engineer-Technical Council, similar to the Building Trades Council, to coordinate and strengthen the drive within the AFL-CIO unions.

Russell M. Stephens, president, American Federation of Technical Engineers, AFL-CIO, declared the labor movement "has fallen flat on its face" in trying to organize engineers and scientists. He attributed the failure largely to the opposition of the National Society of Professional Engineers, which, he said, has engaged in "violent anti-union propaganda." Stephens was particularly bitter about NSPE's contacts with engineering students through the distribution of professional literature and furnishing speakers at student gatherings. He said that NSPE gets to the engineering students in college and "poisons" their minds against the unions.

He held up a recent article in the student publication at Georgia Tech, in which the student-author concluded that unions were not an acceptable method for professionals to resolve their problems, as a "horrible example" of NSPE's influence on the students. The AFL-CIO leader also denounced the idea of "professional" unions and cited the recent strike of the engineers' union at RCA which had led some of its members to resign because it was not a "professional strike." Stephens added: "What in the h—— is a professional strike?" He urged that unions representing engineers seek to negotiate on patent rights, advanced education on company time at company expense, attendance at professional meetings and other means to serve professional interests. He concluded that the major job for the union movement is to reach the engineering students and prove to them that trade unionism is dignified.

The only non-AFL-CIO speaker on the panel, Joseph Amann, president, Engineers and Scientists of America, said that engineers have an "infatuation" with professionalism, and may even shun overtime pay because of this "notion." Amann agreed that this attitude is developed largely in the engineering schools and the young graduates, he said, believe that unionism is not compatible with their rise in the company into managerial ranks. He said that the needs of the engineers are in areas of working conditions, grievances and compensation. Amann said that management uses merit raises as a weapon and that the unions should get some control of merit raise systems. He also advocated the unions getting a voice in company education programs. In what

Scale Model

A scale model of the Yankee Atomic Electric nuclear power plant being built by Stone & Webster Engineering Corporation at Rowe, Mass., is helping engineers and scientists visualize problems in the design of the plant. Charles T. Chave, left, chief engineer of the Nuclear Projects Division and Walter C. Woodman, mechanical engineer in charge of Stone & Webster's engineering work for the project, are shown here.

he termed "spiritual" needs of the engineer, Amann called for greater credit for their work and for their patented ideas.

The "defeatist" tone of the meeting was blasted by John J. Pastin, director, Office and Technical Department, United Steelworkers, AFL-CIO, who claimed his unit had already organized some 45,000 dues-paying members among office and technical workers. Pastin said he is "irritated with all this social, psychological, statistical analysis" of white collar workers. Pastin criticized an article in the *AFL-CIO News*, "White Collar Workers: A Different Breed of Cats" by James W. Goodsell, editor of the *Oregon Labor Press*, as an example of his complaint. Maybe such workers are a little different, he said, but argued that the trouble the unions have been having is because they haven't asked the prospects to join. He denounced the idea that professionals are so different from production workers that they will not accept the trade union concepts of seniority and time-and-a-half for overtime.

Sylvia Gottlieb, research director, Communications Workers, AFL-CIO, closed the panel statements with a criticism of the sales techniques used by the unions. She called "obsolete" and "corny" the union literature depicting "fat cat bosses" and "evil employers" in both writing and cartoons. Such concepts are childish to professional employees, she said, and urged the unions to promote the idea that loyalty to a trade union is not incompatible with loyalty to the company. Miss Gottlieb said that the day of "bread and butter" unionism is over, and to sell professional employees the unions will have to abandon old fashioned brass knuckle techniques of communication. She said that the main reason to offer professionals to sell them unionism is that only through this method can they participate in "on the job democracy," in company with other workers.

At the close of the panel talks questions and comments were invited from the floor. Ted Silvey of the AFL-CIO staff led off with the charge that engineers and scientists are "deeply poisoned" by management, in company with the engineering schools which are "owned body and soul" by the corporations. The corporations also "own" the professional societies, he charged, and called for an investigation of the alleged college - corporation "conspiracy." Sanford V. Lenz of the IUE local at Arma said some unions foster the "poison" by not repudiating the idea that engineers are part of management.

L. L. Schultz, executive secretary, Association of Professional Engineering Personnel, an ESA- affiliated union at RCA, took the floor to reply to the criticism of the type of strike conducted by his group. He said the AFL-CIO "is kidding itself if it thinks it can sell engineers the same way it sold machinists." Engineers must be sold unionism in the colleges, he said. Schultz added, "I have to convince my own members we are a union." The engineer knows, deep down, that he is just another employee, the RCA union leader said, "but he has to be sold on this." Everett Taft, now on the Auto Workers staff, and formerly president of the defunct engineers' union at Minneapolis-Honeywell, claimed the professional societies do not have much influence, except in the colleges, but he complained that they have the field by failure of the unions to be more aggressive. Most engineers in industry are uncommitted for or against unionism, he said. Charles Hall of the Sperry engineers' union denied that there is a "profession" of engineering.

The meeting was closed by comments from Albert Hayes, president of the Machinists' Union, AFL-CIO, who undertook to dispel the atmosphere of gloom and defeat

Meetings of Note

American Institute of Chemical Engineers—National Meeting, March 16-20, Chalfonte-Haddon Hall, Atlantic City, New Jersey.

National Association of Corrosion Engineers — Annual Conference, March 16-20, Sherman Hotel, Chicago, Illinois.

Institute of Radio Engineers — National Convention and Engineering Show, March 23-26, Coliseum and Waldorf Astoria Hotel, New York, New York.

American Physical Society — Annual Meeting, March 30-April 2, Cambridge, Massachusetts.

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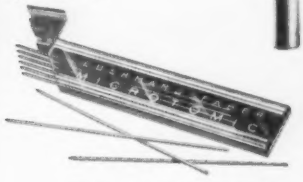

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which had dominated the discussion. Hayes said that the fact that an ideal solution is not available does not mean that progress cannot be made. He cited, in support, the fact that only eighteen million workers are organized out of a potential of twenty-seven million, but said this does not mean that the labor movement has failed. Hayes told the conferees that all leaders and groups make mistakes, but they should go forward with their programs and plans. He took issue with Miss Gottlieb's remarks about the obsolete attitudes of the labor press, stating that it is not only the labor press which sometimes distorts or exaggerates in writing and cartoons. Hayes also stated that there are still some "anti-labor" bosses in commenting on Miss Gottlieb's references to characterizations of business leaders by the labor press.

False Claim Voids Union Victory

The U.S. Court of Appeals for Seventh Circuit has set aside an NLRB certification of a UAW local to represent designers and draftsmen at Allis-Chalmers' Pittsburgh plant because the union literature falsely claimed credit for negotiating a college tuition refund plan on behalf of production employees. The vote was 47 to 45 for the union, but the Court said the inaccuracy was a material matter which might have influenced the vote. The NLRB had refused to upset the vote on the ground that although the union statement was false, it did not exceed the bounds of permissible campaign propaganda. The Court said, however, "If truth is diluted, it is no longer truth. . . . There cannot be 'virtually' the truth any more than there can be 'virtually' a virgin. The deviation from truth in this case is substantial and significant. . . ." The NLRB has asked the court to reconsider its decision because it upsets the Board's general rule that "even a false statement will not vitiate an election unless accompanied by such fraud or trickery that the employees were unable to evaluate the propaganda." (Allis-Chalmers Mfg. Co. v. NLRB, USCA 7th Cir., No. 12331)

Strictly Business

Personalities . . . **Dr. F. R. Owens** has been elected chairman of the board of directors of **Cyrus Wm. Rice & Company,** Pittsburgh, Pa., and **James K. Rice** has been promoted from vice president to president and general manager . . . **John C. Riedel** has been appointed senior project engineer-electronics for **Endevco Corporation,** Pasadena, Calif. . . . **Allen Johnson** and **Paul Mulcey** have joined **Fuel Engineering Company,** New York, N.Y., as associates . . . **R. R. Newquist,** president of **Roots-Connersville Blower Division** of **Dresser Industries, Inc.,** Connersville, Ind., has announced the appointment of **D. M. McDowell** as director of engineering . . . **Robert D. James** has been assigned as a field service engineer in **A. M. Byers Company's** Houston Division office . . . The promotion of **Duane C. Manning** to the position of West Coast sales manager of **Fairchild Control Corporation** has been announced . . . **Carl Clegg** has been named regional manager for the newly-created Industrial Division of **American Standard** with offices in Kansas City, Mo. . . . **I. J. Karassik** has been appointed consulting engineer and manager of planning for the **Worthington Corporation's** Harrison, N.J., Division.

Mr. Owens

Three promotions were made recently at **The Timken Roller Bearing Company,** Canton, Ohio. **Harry R. Neifert** was promoted to chief engineer of Physical Laboratories, **Ralph McKelvey** was named assistant chief engineer, and **Raymond L. Hill,** project engineer . . . **Robert W. Lasher** has accepted a position as a staff engineer in the Reliability Section of **Bendix Aviation's** Systems Division, Ann Arbor, Mich. . . . **Raymond T. Zwack** has been named manager of development engineering at **Solar Aircraft Company's** Des Moines Division . . . **Charles W. Elston** has been appointed general manager for **General Electric Company's** Gas Turbine Department, Schenectady, N.Y. . . . **Richard C. Cole** has been named president of **Vitro Uranium Company,** Salt Lake City, Utah, a division of **Vitro Corporation of America** . . . The appointment of **Dr. Milton Becker** as director of product engineering for **Continental Device Corporation,** Los Angeles, Calif. . . . **Bernard J. O'Neill** has been named to the newly-created post of vice president in charge of engineering at **Magnetic Amplifiers, Inc.,** New York, N.Y.

Mr. Zwack

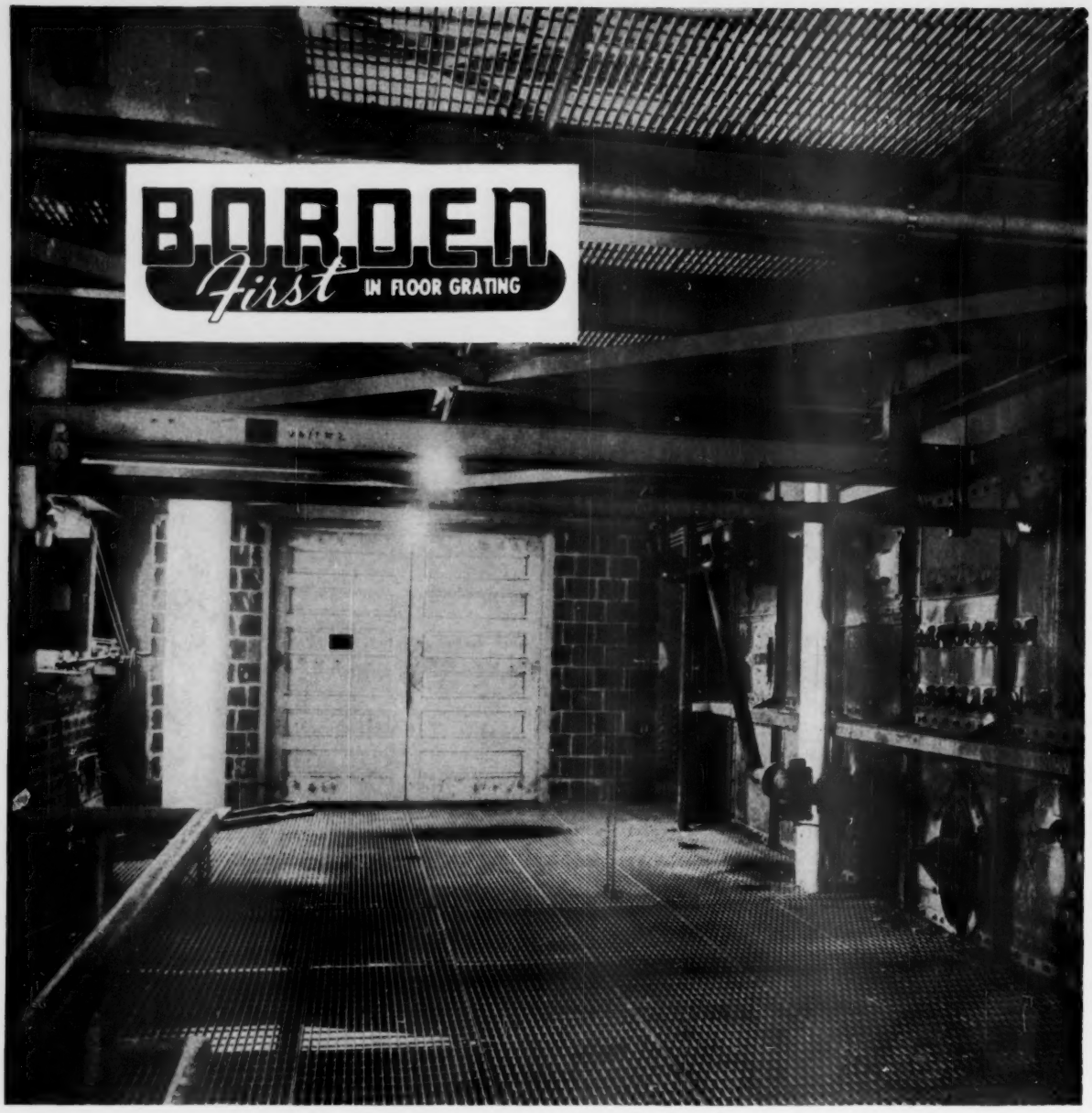
Hazen and Sawyer, New York, N.Y., have announced that the following engineers have become associates in the firm: **C. Richard Walter, Francis P. Coughlan, Jr., Remig A. Papp, Joseph N. Rizzi, Jr., John W. Neave** and **Walter B. Sinnott** . . . **Robert C. Kany** has been named representative for **Pennsalt Chemical Corporation's** line of corrision engineering products in Florida . . . **Elmer S. Barrett** has been elected president and chief engineer of **Photronix, Inc.,** Columbus, Ohio . . . **Robert S. Buffum** has joined the staff of **Comstock & Wescott,** Cambridge, Mass. . . . The election of **William B. Poor** as senior vice president of **Ford, Bacon & Davis, Inc.,** with offices in New York, Chicago, and Los Angeles, has been announced by **Charles C. Whittelsey,** chairman and president . . . **George J. Brown** has been advanced from project engineer to chief engineer of **Statham Instruments, Inc.,** Los Angeles, Calif. . . . **D. E. O'Connor** and **T. J. Merritt** have joined the Houston, Tex., engineering department of **Commonwealth Services Inc.** . . . **Alfred T. Glynn** has been named chief engineer of **Sturtevant Mill Company,** Dorchester, Mass. . . . **Robert J. Russell** has been appointed executive vice president of **Hardings Company, Inc.,** York, Pa.

Mr. Barrett

New Firms . . . **Alfred J. Ryan** has announced that his previous associates, **Albert T. Knuckey** and **Herbert F. Hall,** together with a newly-appointed associate, **David E. Fleming,** have joined him in the formation of **A. J. Ryan and Associates, Inc.,** Denver, Colo. . . . **Charles M. Noble** has announced that he has opened a consulting engineering office in Princeton, N.J. . . . **David M. Schoenfeld** has announced that he has established a consulting engineering practice with headquarters in New Canaan, Conn. . . . **William H. McFarland** and **John W. Johnson** have announced the formation of a new partnership, **McFarland-Johnson,** with principal offices in Binghamton, N.Y., and Buffalo, N.Y.

Mr. Schoenfeld

New Offices . . . **Spencer, White & Prentis, Inc.,** have announced the opening of a district office in Pittsburgh, Pa. . . . **Sam Evans,** consulting mechanical engineer, has announced the opening of an office in Los Angeles, Calif.



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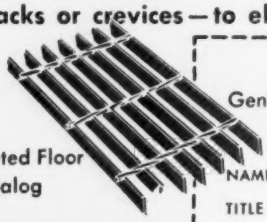

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Financing Overseas Construction

In a $119,000,000 nickel-cobalt project by which private U.S. capital is radically strengthening and diversifying Cuba's basic economy, this cluster of giant reactors plays the key role. Fifty-five feet high and weighing more than 100 tons, these lead-lined "pressure cookers" at Moa Bay in Oriente Province put nickel and cobalt into solution by treatment with sulphuric acid at elevated temperatures.

By

DANIEL A. DEL RIO

Former Vice President, Hanover Bank of New York, and presently U. S. Representative, Banco Nacional de Cuba

THERE is a great difference between a firm doing business in the United States, and one handling construction work abroad. The firm operating overseas has many problems to cope with including language, local labor laws, and social and political regulations arising from nationalistic trends, which limit or totally prohibit employment of foreign technicians. But of primary importance are financial problems and I should like to deal with this area of interest here.

The principal financial risk to the overseas contractor, is in my opinion, in having to deal in foreign currencies. He has to protect himself, not only against the wide fluctuations that may be registered by the local currency in relation to the dollar, but also, in the case of soft currencies he has to create ways and means to provide for his dollar requirements, i.e., dollar salaries of his managers and foreign technicians; dollar costs of the machinery and materials employed in the construction; as well as interest charges and other dollar costs on that part of the financing to be arranged in the United States; and what is more important, the cost of legally transferring abroad these dollar requirements.

In addition, he has to study carefully, not only the local costs of financing, but also the local banking regulations. These local costs, depending upon the country involved, vary greatly, and unless the contractor, before submitting his bid, carefully provides for these contingencies, he is liable to eventually find to his chagrin, that what he thought was a favorable and profitable deal, turns out to be a financial headache.

Identification of Risks

In appraising the risks confronting the contractor engaged in construction work abroad, these can be classified in two categories:

1. The political and economic stability of the country involved.
2. Its exchange position.

The political stability of the country is of paramount importance, and the contractor should carefully study, not only the underlying causes for the apparent political strength or weakness of the regime in power, and what is going to be the length of its legal tenure in office; but also, in the case of a sudden change, because of elections or otherwise, what are the prospects of the new government continuing to honor the commitments of the previous one.

Then, of course, and just as important to consider, should be the fiscal and economic conditions in that country. In the case of government public works: is the budget in balance? Are there sufficient revenues provided for to amply cover for the cost of the new public works contracted? Or how

does the government intend to pay for them?

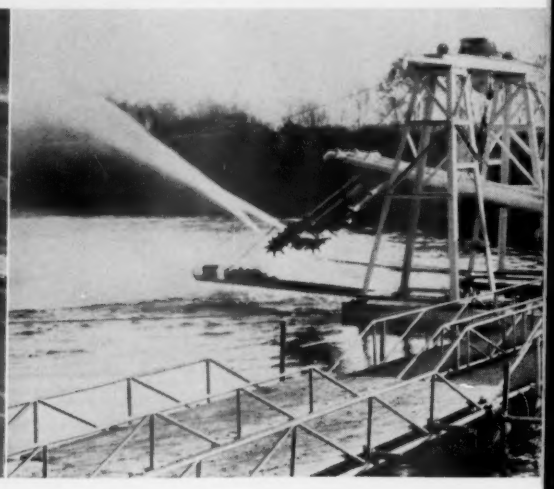
The general economy of the country should also be carefully analyzed. It has been my experience when dealing with foreign countries, that whenever economic conditions are bad, and unemployment is rampant, there are bound to arise all kinds of social disturbances, which sooner or later affect the political stability of the government.

But whether the overseas contractor is engaged in public or private construction work, his main preoccupation should be that of the exchange situation. It is an acknowledged fact in any foreign country, that unsettled economic, social or political conditions greatly affect the stability of the local currency in terms of its international value, subjecting same to wide exchange fluctuations, and in most cases, to continued devaluation.

The international balance of payments of the country involved, should also be studied. A chronic international unbalance, where the outgo in foreign currencies, exceeds income, year after year, is bound to be reflected in a continued fall in the international value of the local currency. The contractor has, of course, to provide ways and means to protect himself against this continued depreciation.

Then again, there is the question of exchange restrictions, current or to be imposed. In dealing with this problem, the overseas contractor should carefully look into the legal means, if any, that may enable him to transfer abroad a sufficient amount of local currency to meet its dollar commitments.

In cases like this, it is customary for the American firm to provide in the construction contract, for a certain amount of dollars to be freely transferred abroad. In most countries, as it is the task of the local Central Bank to handle these problems, that institution should be made a party to the construction contract. Also, a clause should be inserted there, protecting the contractor against any future exchange restrictions that may be imposed.



Sources of Financing

In the case of public works abroad, where the contractor undertakes a piece of work on behalf of a foreign government, or of one of its subsidiaries, there are certain government agencies, both here and abroad, organized to assist in financing the venture. Familiar organizations, of course, are the Export-Import Bank of Washington; with the International Bank for Reconstruction and Development (World Bank), and with the latter's subsidiary, the International Finance Corporation. Besides, there are other government agencies, such as the International Cooperation Administration and the Loan Development Fund. Briefly here are the principal requirements of these organizations.

The Eximbank, with few exceptions, undertakes the financing of American exports, on a 3, 5, or 10 year basis, depending upon the credit risk of the prospective borrower, the country of destination and of the nature of the goods involved. If the goods are construction materials, the term for repayment is usually comparatively short, but in the case of heavy machinery this term is made longer. Eximbank of course is mainly interested in financing sound long term ventures involving exports of durable or capital goods. In the case of construction materials financed on a short term basis they prefer to stand aside and let the commercial private banks handle the business.

GENERALLY speaking, the Washington bank requires the American manufacturer to participate in the credit risk to the extent of between fifteen to twenty-five per cent. Another requirement is that the foreign buyer make a cash payment of between fifteen to twenty per cent upon shipment. The balance, usually not more than sixty per cent, is financed by the bank. In certain financial deals, in the case of special political loans for public works, and at the request of the State De-

partment, Eximbank agrees to undertake the entire financing of the construction job. This type of loan is classified as helping the economic development of the foreign country.

Eximbank besides, as the authorized agent under the so-called "Cooley Amendment," receives applications for loans in certain foreign currencies.

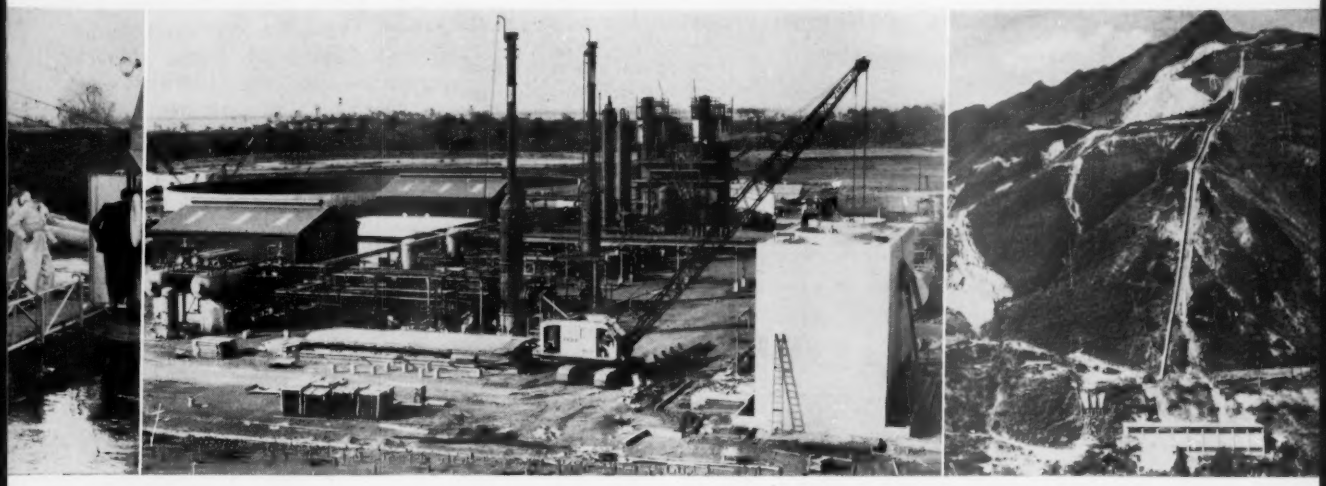
tion that the American contractor may have access to these foreign currencies, only when the construction work involved is for industrial or plant expansion. Equipment of local manufacture can be acquired with the proceeds of these loans.

These loans may run for terms up to a maximum of seven years, and interest rates are to be similar

ers a stock option to purchase a determined amount of shares in the enterprise.

THIS type of financing might be interesting to the American contractor in the case of a construction job overseas with a given industry, for plant expansion.

The Loan Development Fund, controlled and operated through the International Cooperation Ad-



Far left: Cuba will take a major step toward world prominence in mining with the completion of this nickel-cobalt project at Moa Bay in Oriente. Left center: A new dredger which will remove sludge, gravel, building materials and vegetation from under water without the use of buckets or cutters is shown being demonstrated recently in Britain. Right center: Another view of Cuba's nickel-cobalt plant which will generate the hydrogen sulphide used in concentrating nickel and cobalt from ores at Moa Bay. Far right: Emerging from Paucartambo's main 8-mile long tunnel at Yaupi Alto in South America is this 3,800-foot penstock, with average outside diameter of about seven feet, which conducts the water to the Yaupi Bajo powerhouse 1,500 feet below.

The Cooley amendment approved recently under the Agricultural and Trade Development Act of 1954, authorized Eximbank to lend to private business up to twenty-five per cent of the foreign currency proceeds realized from sales of agricultural commodities.

Eximbank issued recently a list of eighteen foreign currencies available for loans, with a total dollar equivalent of nearly $90 million. In the list are included currencies of France (the supply was exhausted last July 15), Italy, India, Turkey, Israel (the supply available was totally loaned by May 31) Greece, Peru, Mexico and Colombia (the Mexican currency available was all used up by March 19, while the Colombian pesos held by Eximbank had all been loaned up last July 15).

These loans may only be available, in the case of American firms and/or its foreign subsidiaries for the general objective of business development or trade expansion. It must be assumed from this limita-

to those charged for comparable loans in the borrowers country.

The International Bank is limited in its scope to the financing of only those overseas projects that are guaranteed by a foreign government. On the other hand, the International Finance Corporation, a subsidiary of the World Bank, was organized to make loans abroad to private industry, where the prospective borrowers need funds for plant expansion, and agree to provide part of the required capital themselves. In this case, the International Finance Corporation, as an inducement for the granting of the loan, obtain from the borrow-

ministration, is more liberal in the granting of credit, although the same rules apply to this latter government lending agency as to credit risks, as is the case with Eximbank.

Loans may be obtained from the Loan Development Fund under the following general conditions:

1. That the financing be for the benefit of one of the less developed friendly countries.

2. That the loan may not be obtained from other free world sources under reasonable terms, including private investment, Eximbank, World's Bank and International Finance Corporation.

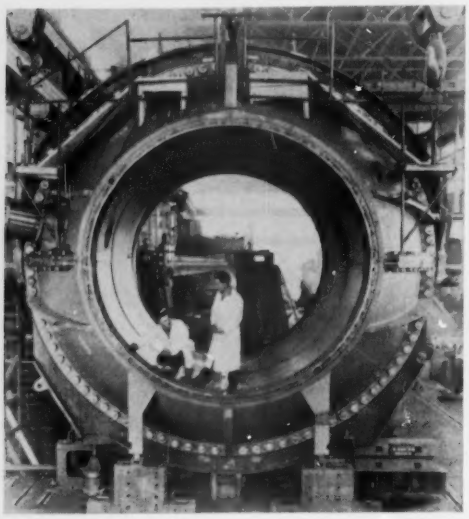
3. That the project be econom-

ically and technically sound and,

4. That this project be for development of economic resources (i.e.: industrial, agricultural, financial, commercial, extractive power, transport, communications, irrigation, reclamation and drainage projects, etc.), or either for the increase of productive capacity, or for improvement of the standards of living.

Loans may be made to foreign governments, private enterprises, dertakings. However, they may, in exceptional cases, organize a syndicate of various financial interests to handle the larger deal. In general, AOFC operations follow the pattern of the Eximbank loans where a cash payment is made of twenty per cent, the exporter participates in the risk in another twenty per cent, and AOFC loans the balance of sixty per cent.

All of the sources of financing just briefly described are for those



Five giant smooth-bore valves for a hydro-electric scheme connected with the St. Lawrence Seaway have been designed in Britain (by the English Electric Company Ltd.) and are being made in Canada by the British company's associates (John Inglis Co. Ltd., Toronto). They will control turbines rated at 180,000 horsepower at the Quebec Hydro Electric Commission's power station, named Bersimis II and a St. Lawrence north-shore project. In the photo, one of the five valves "swallows" two of the men at the Toronto plant.

or both. These loans are repayable up to forty years, in dollars or local currency, at option of borrower, with a four-year grace period on principal repayments. The amount to be loaned by the Loan Development Fund should represent not over sixty per cent of total funds required.

The American Overseas Finance Company is a private finance company, controlled as I understand it, largely by the Rockefeller family. Loans are limited to the financing of exports and for development financing of industrial and mining fields abroad, involving a longer term of repayment than that customarily required by the commercial banks. However, as their loans or advances to any one client are limited by the charter of the company to ten per cent of their capital funds, this limitation in itself, might prevent this organization from handling large financial un- transactions involving repayment beyond, say, two years. However, in the case of shorter financing, say, between six months and two years, it may be possible under certain conditions, mainly concerned with the credit risk of the country involved, and the quality of the guarantees offered, or of the collateral, if any, to find certain New York banks and finance houses on Wall Street, interested in this short term type of operation.

Methods of Financing

In undertaking any construction work abroad, it should be the main concern of the American contractor, to try not to involve or commit its firm in the risk of financing the project. There may be special cases, however, where the contractor has to assist through his own bankers and financial connections in arranging the deal, and perhaps, assuming that part of the risk, covered by its own profits in the venture.

Then again, there might develop situations when the overseas contractor may be called upon to advance its own funds, for short periods of say, between one month and three months. In such cases, he should try to borrow from the local banks his foreign currency requirements, rather than remit dollars, for that temporary construction period. These local borrowings, while costing a great deal more, because money rates abroad are usually much higher than in America, have the advantage of eliminating the exchange risk incurred in the transfer of the dollars abroad.

This type of local financing is usually arranged under the guarantee of a New York bank, or by means of a swap. This latter procedure, where the contractor sells dollars against spot local currency, and arranges through a bank a reversal operation a few months later, is generally more costly than local borrowings.

There are some special instances, such as when contracting with our own Government for construction work abroad for embassy buildings, etc., that payment for the engineering work is tendered partly in local currency, and partly in a foreign currency, other than dollars. It has been the practice, for our State Department to furnish the overseas contractor with a list of these foreign currencies, usually so-called soft currencies, because their transfer into hard currencies, namely, U. S. dollars, is limited or subject to stiff regulations. It is up to the contractor to choose among this list the soft currency he prefers.

In cases like this, before submitting his bid, the contractor must have an accurate yardstick of costs, as well as how much is going to be his dollar compensation. To accomplish this, he should arrange with a reliable banking house or exchange dealer, through options or otherwise, the sale in advance (predicated on the securing of the construction contract), at a given rate of exchange, of these soft currencies for delivery at certain specified dates.—**End.**

FROM WASHINGTON

BY
MILTON F. LUNCH,
N.S.P.E.'s Legislative Counsel

THE PROFESSIONAL STAKE IN UNION REFORM "SWEETENERS"

AS the evidence mounts before the McClellan Committee that there is an undoubted relationship and control, in some cases, between some labor unions and racketeers and gangsters, the weight of public opinion for reform legislation is being felt by Congress. Congress is in Act II of this drama, last year's legislative effort to deal with the problem having ended in failure.

The reason for the failure in 1958, and the same reason for the possible failure in 1959, can be summed up in the statement that the desire for reform legislation was outweighed by the temptation to play politics with the legislation, for the benefit of one side or the other in the labor-management area. There is virtually no opposition to labor reform legislation, and there is relatively little disagreement that the direction of the legislation should be in terms of mandatory disclosure and democratic internal procedures in the unions. Why, then, the delay and the current doubt that this much reform can be achieved? The answer lies in the word, "sweeteners," which have been appended to the various reform bills and which are intended to give one side or other an advantage in labor relations matters having no direct or indirect connection with the racketeering problems.

◄ Senator John F. Kennedy

Senator Barry Goldwater ►

On January 20, 1959, Senator John F. Kennedy, supported by eleven other Senators, introduced a labor reform bill substantially the same as the Kennedy-Ives bill of last year. The Massachusetts solon, who heads the Senate Labor Subcommittee, said that his measure "is primarily a labor-management reform bill, dealing with the problems of dishonest racketeering—it is not a bill on industrial relations, dealing with the problems of collective bargaining and economic power. The two areas of legislation should not be confused or combined." But in the next breath he added that the bill did contain non-related amendments dealing with the voting rights of economic strikers and special procedures for union representation in the building trades. Senator Kennedy said these items were included at the insistence of Secretary of Labor Mitchell. He did not mention the non-related Taft-Hartley amendments in the bill dealing with the jurisdiction of the NLRB or the revised definition of "supervisor"—to make more of them eligible for union representation.

The Administration did not really differ with Senator Kennedy on the principle—it only wanted to go further with non-related Taft-Hartley amendments. Thus, the President's special labor message proposed to deal with NLRB jurisdiction, voting rights of economic strikers, special arrangements for the building trades, non-communist affidavits, composition of the NLRB, and other more controversial subjects—secondary boycotts and organizational picketing. The President told his news conference on January 29 that the legislation should be "broadly based" so that the problems "should be corrected at one time." Senator Barry Goldwater of Arizona, ranking Republican member of the Labor Committee, introduced the Administration's bill. Senator Goldwater strongly favors tighter controls on unions and commended Secretary Mitchell's presentation at the hearings, while Mitchell tried to disassociate the Administration bill from Goldwater's position, and Senator Kennedy pressed the other tack, by calling it the "Goldwater Administration bill."

The result of these developments was obvious—the hearings and the other areas of public debate turned in major part from consideration of anti-racketeering legislation to political give-and-take as to which "sweeteners" were better or worse for the competing

elements in the labor-management struggle. Senator Kennedy denounced the Administration for putting such controversial non-related proposals in its bill, and accused Secretary Mitchell of doing so to prevent any legislation. The latter pointed to the Kennedy bill's numerous non-related proposals in defense.

There are some on both sides who see the danger to needed reform legislation in this situation. Senator Clifford P. Case of New Jersey, a Republican member of the Senate Labor Committee, has stated he favors shifting the non-related Taft-Hartley amendments to a second bill, and Senator Sam J. Ervin, Jr., of North Carolina, one of the sponsors of the Kennedy bill, and a member of the McClellan investigating committee, said, "I would have nothing in the bills that deals with Taft-Hartley. I have hopes that the committee will remove these provisions."

◄ Senator Clifford P. Case

NSPE has commended both of these Senators for their position, pointing to the example of a non-related Taft-Hartley amendment which would have serious detrimental effects on professional engineers. The reference was to the construction industry provision, which is something of a sad story of political "shenanigans" all by itself. Last year NSPE went "all out" to oppose the construction industry provision in the Kennedy bill, and the Society has undertaken a similar effort this year.

The construction industry provision originated from a long-time recognition that the normal processes of union certification by the NLRB through determination of representatives by employee majority vote was not often practical when employees are rather frequently moving about—as in the case of building trades employees. A series of meetings, under Labor Department auspices, between the contractors and the building trades unions produced an agreement to deal with this problem by allowing the NLRB to certify a building trades union without a vote under certain stringent conditions designed to protect those situations in which the majority of the employees affected did not want the union representation.

When the Kennedy bill emerged last year, however, the approach had been changed from one of NLRB certification to a more general provision to permit the building trades union and employers to enter into a mandatory union representation and membership contract for all employees of the contractor. The same general language appears in the present Kennedy bill and thereby poses the same threat to professional engineers employed by construction contractors.

The Administration (Goldwater) bill does express the original agreement for a certification procedure, and under it there is some reasonable assurance that the NLRB would honor the separate voting rights of professional employees. The Labor Department's assurance to NSPE that the rights of professionals would not be endangered has some substance, as there would be an NLRB certification limiting the unit to those found appropriate. This would not be true under the Kennedy bill.

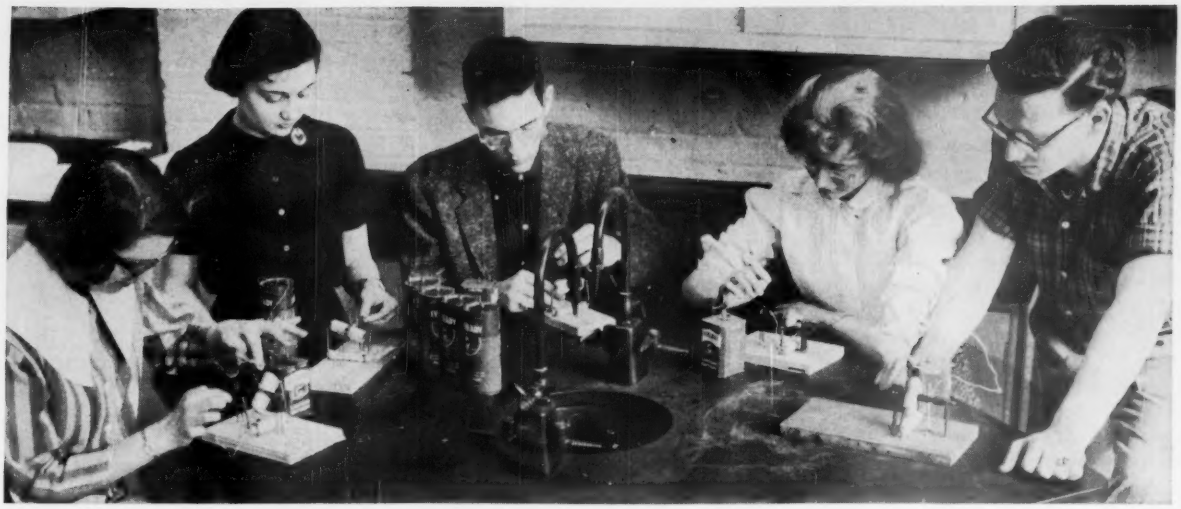
In the face of this situation, NSPE has taken the following steps:

1. Presented the complete story, with background, to the Senate Labor Committee.
2. Called upon the Committee to divorce general Taft-Hartley amendments from anti-racketeering legislation.
3. If a construction industry amendment is retained, suggested using the language and procedure prescribed in the Administration bill, as originally agreed to by the parties.
4. Suggested further amending the language of the Administration bill, however, to make certain the rights of professional employees will be respected by adding after the reference to appropriate unit, "subject to the limitations of Section 9 (b)."
5. Sponsored a broad-scale "grass roots" campaign from state and local levels to advise members of Congress of the urgent need and desire of professional engineers to protect their professional brothers in the construction industry.

Senator Sam J. Ervin, Jr. ►

The response to Step 5 has been immediate and encouraging. Letters, telegrams and personal contacts from NSPE members have resulted. Additional doses of "grassrootitis" are needed, however, and it is hoped that this presentation will provide the information and stimulus to bring about a swelling tide of protest from others in NSPE.

As we go to press, the Senate subcommittee has reported the Kennedy bill to the full Labor Committee where there will be a major effort to eliminate the "sweeteners." The AFL-CIO has sent word from its Puerto Rico conference that it will not "accept" a labor reform bill without the "sweeteners." Senator Kennedy has declared that he will go along with a straight reform bill, if necessary. Apparently it all adds up to a major floor fight with the outcome much in doubt. The professional position is clear—the major question is whether it will be voiced loud and clear enough to overcome the political motivations behind the construction industry "sweetener."



Electric motors were made by the students from wire, nails and friction tape. They show the principle of producing machine energy from electrical energy.

At Pittsburgh School:

Secretaries Being Trained As Engineering Assistants

By

DOROTHY C. FINKELHOR, Ph. D.

President-Founder, Business Training College, Pittsburgh, Pa.

EACH year, colleges and universities turn out hundreds of well-trained engineering professionals who are absorbed by industry and research organizations. These men are the specialists and to the companies that hire them, their time is valuable. Unfortunately, the specialist must often take time out to train his secretary in the area of engineering or scientific work. In many cases, he must tend to the tedious necessities of office routine himself. Sidetracked by office humdrum, and with the brakes put on his production output, the specialists' time loss becomes a serious expense to his company.

However, our business college in Pittsburgh is, we think, helping to set the situation right. A unique two-year program for engineering secretaries, initiated in 1955, is providing the trained engineer with the break he deserves. At the same time, this unusual program gives the school's graduates a truly rare opportunity to enter the highly specialized field of engineering as assistants or aides.

Already well-known for training professional secretaries in the medical field, Business Training College now offers students a program featuring a scientific - engineering background in addition to full secretarial skills. Upon graduation, these students, equipped with 1200 hours of lecture, laboratory and field training, can qualify for responsible positions in civil, mechanical, electrical, chemical, metallurgical, aeronautical, and industrial engineering.

The school first launched an extensive study into the needs and requirements of the engineering profession. The staggering task of surveying every aspect of the field began in 1952. Then came the demanding prospect of creating a new curriculum, hiring faculty members with scientific and engineering degrees, and writing suitable and completely novel textbooks tailored precisely for such a course.

The curriculum planning is the outstanding contribution of Dean Phyllis E. Davis. Checking every phase of the engineering profession, she obtained data on the important techniques and training which would have to be included

in the course. These facts were sifted, evaluated and finally molded into an intensive, two-year engineering secretarial program, the first of its kind in the nation.

"Since this is a unique course," said Dean Davis, "we had to have a unique curriculum. Neither high school nor college courses, as they are conventionally taught, would serve our students in their roles as secretaries to engineers. No textbook had just what we wanted, either," she added, "so we wrote our own."

An interesting sidelight is the creation of a new engineering shorthand system. Devised by Dean Davis, it is a composite of the familiar Gregg method and the symbol abbreviations of the technical engineering terminology. Not only can the secretary speak the engineer's language, but the task of difficult, technical dictation is greatly facilitated by use of this rapid symbol shorthand.

Some of the hard to get elements are obtained from their oxide by reduction with aluminum. Here is a student obtaining cobalt metal from cobalt oxide by this method.

With the curriculum problems overcome, BTC's next step was the quest for a special type of science teacher. The school knew what it wanted: an instructor, bound by no regulations or textbooks, who could do what no one had done before – teach a unique science course for unique students in a business school! BTC was fortunate to discover Mrs. Iola B. Parker, summa cum laude graduate of Florida Southern College.

Edith Jane Stafford, of Cannonsburg, Pa., an engineering secretarial student at the Business Training College, has obtained crystals of potassium ferro-cyanide from old leather scraps, potash, and iron filings during her laboratory experiments at the school.

After seventeen years in the public schools in Florida, plus postgraduate work in mathematics, chemistry and education, Mrs. Parker, working on the theory that nothing is impossible, now guides her "sub-engineers" into research and knowledge far in advance of their years and grade.

THE engineering secretarial course at BTC offers a complete program of secretarial studies: shorthand, typing, spelling, and dictation. In addition, students are trained in pre-engineering physics, technical mathematics, inorganic and organic chemistry with laboratory work, survey courses on current engineering literature, blueprint reading, drafting, and slide rule instruction.

"We can give them enough skill with the slide rule and drafting board," says Mrs. Parker, "to take over some types of simple engineering work."

Students in the 1958 class are offered the added advantage of Russian. Taken as an elective, this informative course includes reading and writing with transcription of professional, scientific, and engineering articles.

"We need people who can proofread technical reports," observed one corporate official. "Most secretaries don't know enough about engineering terminology to avoid mistakes when they're typing reports, so our engineers have to take time out to go over the finished paper."

Students are given a panoramic view of the many branches of science.

"Always, we keep in mind that we are training secretaries, not engineers," said Mrs. Parker.

In brief, the science courses begin with chemistry and the structure of matter. Then follows a study of the elements and their compounds, solutions and crystals.

The experiment shown above is entitled "Razor-Blade Radio." Made from wire, a lead pencil, safety pin, razor blade, a couple of paper clips and a cardboard roll, this radio actually receives broadcasts from nearby stations.

More attention is devoted to the chemistry of the carbon compounds than in general chemistry courses, and even greater emphasis is placed on the metals—how they are obtained from their ores, their alloys, their uses and their processing.

"They'll learn metallurgical terms much faster if they've actually extracted metal from its ore in the lab," she said.

In the physics course, the student goes into mechanics, hydraulics, heat, radiation, electricity, electronics and atomic energy. He is especially drilled in electrical and mechanical terms since these form a nucleus for the terminology in most of the other fields.

This student is preparing to obtain the element manganese from its oxide by reduction with aluminium. From the equation of the reaction she has computed the relative amounts of the materials needed. She is shown carefully weighing the necessary quantities.

Experiments for the science courses are many and varied. To name a few: tests for hydrogen and hydroxylions, purification by crystallization, glass bending, reaction of acids and bases with metals, and the exciting Goldschmidt method for removing metals from their compounds. Experiments in physics deal with electro-plating, electro-etching, making wet cells and atomic cloud chambers. One of the most interesting experiments is the construction of a radio from a handful of junk including wire, razor blade, lead pencil, safety pin, and a couple of paper clips!

For on-the-spot study, frequent field trips are scheduled to steel mills, aluminum plants, glass factories, foundries, smelters, power plants, TV broadcasting stations, radio and radar installations, control departments, science shows, chemical manufacturing plants, and science conventions.

Many firms and agencies have provided the actual technical correspondence and reports which were incorporated in the textbooks created for this program. Guest lecturers from major corporations provide practical, down-to-earth information about the intricacies of their particular field.

THE final requirement for graduation is an engineering thesis. Students select their own topics at the end of the first year of study. During the second year, research is done and the completed manuscript is submitted for evaluation and grading. Topics run the gamut of business and industry: "The Pittsburgh Renaissance;" "The World of Plastics;" "History of the Automobile;" "Story of the Pennsylvania Turnpike;" "The World of Steel;" "The Fascinating Oil Business;" "A Chronological History of General Motors Corporation, 1908-1958;" "Atomic Radiation;" "Radar," and "The Study of the Atom."

"We're not trying to make full-fledged scientists out of these students," said Mrs. Parker, "but we can give them enough background in basic science so they can follow the work of their employers with alert intelligence and sympathetic understanding of the problems encountered."

Students, mostly just out of high school, qualify for entrance through aptitude tests and personal interviews.

The college realizes that for professional training, it is most important to select students who have not only an interest in the field but the innate ability, aptitude and intellectual curiosity necessary for scientific professional training.

When BTC's first "pilot" class started in 1955, the school was swamped with world-wide inquiries from professional men on the availability of the graduates. Since the class consisted of only three students with two years of study before them, employers had to wait patiently until graduation to employ them. But the demand far exceeds the supply. The students who graduated last June are rapidly being absorbed into local industry. And it's certain that next June, BTC's new engineering secretaries will be a welcome sight in any personnel office.

The continued enrollment increase in the last three years, plus daily inquiries from employers concerning future graduates, now require facilities to make room for a new crop of hopeful engineering secretaries.

The two-year program, which costs $1,420 for the entire course, is interrupted only in the summer when technical employment in the science field is open to the students.

While most corporate officials are slightly amazed at the abilities of BTC's engineering secretaries, the fact remains that every graduate can relieve two engineers of clerical, office, editorial, and administrative routine. This background and experience goes far beyond the secretarial skills and the ability to understand the use of engineering terminology. A good example is BTC's Pat Rorabaugh who plans and organizes charts for departmental use at Gulf Oil and, in some cases, calls on her expert drafting training for plotting and diagraming. Presently she is engaged in job evaluation analysis at Gulf, a task which is preparing her for more responsible assignments.

Going beyond industry, the engineering-secretarial program may soon "enlist" in the Service. BTC, anxious to render all possible aid to the national defense effort, has offered to make the course available to civilian and military personnel.

A visit to the Pentagon in April, 1958, began discussions. School officials met with top military leaders in a two-day session to review the plan. Citing the success of their secretarial program in civilian life, they argued that its military counterpart would have the same results: reduction in the number of

(Continued on page 40)

New Literature

BOILERS—A 16-page magazine issued by Vapor Heating Corporation shows recent industrial installations featuring the Drum Modulatic Water Tube Boiler. The story of each installation is told in a series of photographs and captions telling how heating problems in each industry were solved by single and multiple boilers, both low and high pressure systems. It tells how one company decentralized their power plant by placing 150 bhp Drum Modulatics in production areas, alongside stairways, and in the electrical maintenance shop.

(Circle 15 in Readers' Service Dept.)

NITRIC ACID—A 4-page brochure describing the engineering and construction of a Nitric Acid Concentration Plant of a new and improved design is available from Badger Manufacturing Co. The plant, built by Badger for Hercules Powder Co., produces a 99+ per cent concentrate at greatly reduced investment and operating cost, it is claimed. The brochure includes flow chart and description of process, engineering and construction details, and information on process licensing.

(Circle 16 in Readers' Service Dept.)

PORCELAIN ENAMEL—Three separate 4-page brochures containing detailed information on its line of veneer and insulated porcelain enamel on steel panels have been issued by the AllianceWall Division of AllianceWare, Inc. Specifications and product details on porcelain enamel on steel veneer panels is covered in one brochure. Insulated porcelain enamel on steel panels are described in another brochure, and the third shows the twenty-eight colors and patterns available in both the veneer and insulated panels.

(Circle 17 in Readers' Service Dept.)

MAINTENANCE—A 24-page booklet entitled "How to Make Your Own Machine and Repair Parts Quicker and Easier" has been published by La Salle Steel Co. The booklet is designed especially to help solve maintenance and repair part problems. It covers care and trouble-shooting of machines and equipment, machining and welding techniques and contains drill hole tolerances and a grinding limits chart.

(Circle 18 in Readers' Service Dept.)

SPACE—A new and informative brochure on "Space Age" contract manufacturing showing the scope of their manufacturing capabilities in a quick reference manual is now available from Farwell Metal Fabricating. Eight-

een photographs of missile and guidance systems components, electronic cabinetry, jet engine parts and special handling equipment produced at Farwell to customer specifications are shown along with twenty-one plant photographs demonstrating the latest types of equipment and production facilities available in the Farwell plant.

(Circle 19 in Readers' Service Dept.)

BEARING LUBRICATION – Lubrication of miniature instrument bearings is the subject of a new lubrication manual recently issued by Miniature Precision Bearings, Inc., Keene, N. H. It supplies data and information of the various types and brands of oils and greases available to bearing designers and users.

(Circle 20 in Readers' Service Dept.)

STANDARDS—An all new, 84-page catalog said to be a complete source for data on all the "standards" for tool, die, jig, and fixture design and applications is available from Jergens Tool Specialty Co. The 1959 edition gives complete specifications and cost-saving data on over 2,000 "standards," including world's largest line of work-holding equipment, chuck jaw blanks, handles, knobs, wheels, strap clamp assemblies, forged items, plus hundreds of other jig and fixture components. Gives detailed specifications and engineering drawings with tracing templates available.

(Circle 21 in Readers' Service Dept.)

GRINDING WHEEL—Chicago Wheel and Manufacturing Co. is offering a 12-page illustrated Grinding Wheel catalog. There is a complete range of sizes, shapes with prices for every industrial application. The catalog includes vitrified, resinoid and rubber bonds in cut-off, straight, recessed and plate-mounted wheels. Recommended applications are also given. Important in the line are Chicago Flex and BR (Break Resistant) wheels for portable grinding, weld and metal fabrication, finishing, portable cement grinding, notching, and plastic grooving.

(Circle 22 in Readers' Service Dept.)

IRON—A 36-page illustrated catalog describes the complete line of American Ductile Iron Products manufactured by the American Cast Iron Pipe Co. The catalog gives valuable technical information including grades, specifications, dimensions and weights, uses, and applications. Typical applications include underground piping, industrial piping, well casing, tanker piping, industrial rolls and component parts for hydraulic cylinder assemblies, and industrial machinery.

(Circle 23 in Readers' Service Dept.)

MACHINING—A handy size, ready-reference handbook on machining of aluminum has been published by Reynolds Metals Company. The 32-page booklet provides complete data on machining practices, tool angles and designs, and tool materials. Proper speeds, feeds, lubricants and cutting compounds are explained fully, enabling machinists and engineers to realize the unmatched speed and ease possible in machining aluminum and its alloys.

(Circle 24 in Readers' Service Dept.)

ROLLER GRAVITY – Lamson Corporation announces the release of a new roller gravity handbook. It is a reference book for the engineer who uses conveyors to solve unit load handling problems. There are many descriptive illustrations and photos explaining the application of gravity conveyors and the more common accessories. Easy to read charts and graphs are included to assist the engineer to match a conveyor to the loads. The book has a new flavor in that it points out conditions to be avoided.

(Circle 25 in Readers' Service Dept.)

These listings are informational only and are not an endorsement of the products, nor of the manufacturer's claims. To receive any of the new literature described in this column, merely circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.

Ohio Consultants and Work of Their Functional Group

By

HAROLD A. KELLEY, P.E.

Chairman, Consulting Engineers of Ohio, Functional Group of the Ohio SPE

THE renowned success of the Ohio Society has been attributed to the long and successful growth of its predecessor, the Ohio Engineering Society. The Ohio Engineering Society was organized about 1878 and grew in stature and breadth until the registration law was passed in 1934. At that time the Society was converted to a profession group and in 1939 joined NSPE to form "The Trinity" as Perry T. Ford, president of OSPE, 1936, and NSPE, 1939, called the chapter, state and national organization.

The functional groups began to develop during the days of the Ohio Engineering Society. Groups with common interests met for discussions at the annual meeting. These groups were mostly technical but some bore resemblance to present day functional groups. After the conversion to a professional society, it was felt that formal recognition should be given to these groups and that they should be organized along professional rather than technical lines. The leaders of the society recognized that professional problems cut across technical groups.

A committee was set us to study the proper organization for these groups and determined that the committee plan, with appointed officers, did not provide the broad operational base necessary for these groups. The study found that these groups wished to elect their own officers and to have some degree of individuality. Thus the functional group plan evolved.

The study committee's report was approved at the 1939 convention and the Constitution and Bylaws were amended. Even before the report was submitted, the private practice group organized, elected officers and began functioning. Approval of the OSPE board was obtained at the 1939 convention. Therefore, the year 1959 marks the twentieth anniversary of the Private Practice Functional Group in Ohio. In 1956, the group changed its name to Consulting Engineers of Ohio, a Functional Group of OSPE.

The OSPE Bylaws have been revised several times and their outstanding feature is their adaptability to meet changing situations and the growing activities of the groups. The National Society recognized their merit when it modeled its Functional Group Bylaws after those of Ohio. Several state societies have followed NSPE.

The basic tenet of the functional group within the professional society is to provide a forum where the individual engineers may meet for discussions and united action, grouped according to type of professional activity or employment. After this forum is provided, the participants of the group must organize so as to provide for their needs concerning common problems of professional status, salary or fee standards, conditions of employment and others.

Private Practice Group

The engineers in private practice have had an active aggressive organization since its inception. The dedicated leadership of this group has been distributed through nearly all the large engineering organizations of the State and many small organizations.

The present officers are: Chairman—Harold A. Kelley, of Jones, Henry & Williams; Vice Chairmen—E. D. Barstow, of E. O. Barstow & Associates; Raymond H. Fuller, of Burgess & Nipple; Frank S. Palocsay, of Havens & Emerson; Stephen W. Kuhner, of Floyd C. Browne & Associates; Charles E. Pettis, of Finkbeiner, Pettis & Strout; Neil A. McKinley, of Larson, McKinley & Miller; Marion H. Walters, of Alden E. Stilson & Associates and Secretary-Treasurer Fred C. Limbert, of Hatch, Samborn & Steketee.

The Functional Group has undertaken an ambitious public relations program, which includes the printing of material to explain the work of consulting engineers to prospective clients.

This group has always maintained that it represented all engineers in private practice, employees, associates, and principals. The professional engineering employee must be considered a part of the management and be welcomed in discussions of management problems. Case histories of large industries with engineering unions

testify to the effectiveness of the alternative method. The Ohio group does not believe that a wall should be erected between the principals and the employees by restricting the functional group to participation by principals.

Relationship with OSPE

The finest of cooperation has always existed between the functional group and the Ohio Society. In order to foster this cooperation the group reports all its activities to the OSPE Board of Trustees for approval. This insures that all group activities are in accordance with society policy. Thus, when assistance is desired, the group is not looked upon as an alien organization. In furthering this policy, the group does not appoint committees for such tasks as legislation, unauthorized practices professonal practices. Any action requiring study by such committees is referred to the proper OSPE committee. This results in a thorough study of all functional group proposals by a body of men not directly related to the functional group. Thus, the OSPE board has the benefit of a nonpartisan study of all functional group proposals and provides for coordination of the activities of the different functional groups.

The effectiveness of this policy has been demonstrated repeatedly. In a recent case the consultants desired a change in the registration law to provide stiffer penalties for unauthorized practicing. The Functional Group recommended the changes to OSPE, after a study by the Unauthorized Practices Committee, the OSPE board instructed the Legislative Committee to initiate the legislation. The desired amendment was presented to the legislature as a society request and was enacted.

Activities of the Functional Group

At the OSPE convention the group has two half-day sessions devoted to group discussions and business. In addition to these sessions the group holds quarterly all-day meetings in Columbus. The Executive Committee meets monthly with additional meetings of subcommittees and task forces. These meetings are devoted to discussions on problems of needed legislation, fee schedules, public relations, publicity, and other common matters.

Notable examples of past activities are almost too numerous to mention. The most widely discussed were related to the Ohio Turnpike. In one case the unions tried to force an engineer, holding an EIT certificate, to join the union. The Functional Group fought this action through several levels of the NLRB and was successful in blocking the action of the union. Another case in which the Society participated through the Functional Group was in a court case relating to selection of construction materials for the turnpike. The court ruled, in accordance with the Society's contention, that the selection of materials was strictly up to the engineer.

In both these cases it was the Functional Group's dynamic leadership that initiated the action, collected a fund for the necessary legal assistance, and carried the cases to successful conclusions.

The group publishes the *Code of Profession Practice*, a booklet containing recommended fee schedules, sample contracts, Canons of Ethics, Rules of Ethical Practice, Aims and Objectives of the Society and Attorney General opinions, and court cases related to consulting engineers. This booklet was first published in 1941 and has been revised periodically.

There has been other public relations material published. One noteworthy example was a small flyer mailed to all public officials in Ohio advising them that it was not necessary, according to state law, to seek competitive bids for engineering services. This was news to many officials and caused considerable comment at the time.

CEO Principals Group

The consultants of Ohio have felt the need for increased functional group activity for many years. An active program of public relations and publicity have been and are urgently needed. It was recognized that the desired programs would require considerable financing and the consultants did not feel that the society should bear such expenses. Two years ago the consultants asked for and received from OSPE permission to organize a sub-group composed of principals of firms. The objective was to seek contributions from participants of this sub-group to carry out the desired programs.

The formal organization of this group was consummated this year. This group has been titled the Principals of Consulting Engineers of Ohio and participation has been limited to principals of firms who are members of OSPE and are engaged in consulting work only. A principal has been defined as a person sharing the profits and losses of a firm. A consulting engineering firm is one engaged in performing engineering services for a client for a fee, having no connection with sales, manufacturing or contracting.

The stated objectives of this group are to:

- Foster the development of consulting engineering as a recognized profession.
- Promote high standards of performance and professional integrity among consulting engineers.
- Promote the prestige and economic interests of consulting engineers.
- Promote cooperation with local and other consulting engineer groups.
- Develop interprofessional principles of practice along recognized, ethical channels for the benefit of the consulting engineer and the general public.
- Provide a functioning educational program which will inform the public of the services provided by the consulting engineer.
- Act as an information center for participants on matters of mutual interest.

Contributions are solicited with the amount being based upon "the ability to pay" principle. For lack of a better method, this has been based upon the size of the firm. The total number of principals, associates and employees is used as the criteria. Three divisions were set up 1-5, 6-10, and over ten total number of principals, associates and employees in the firm.

To date the group has about 200 participants representing 100 firms; with fifty-seven in the 1-5 division, thirteen in the 6-10, and thirty in the over ten division.

The officers of the principals group are: President—Harold A. Kelley of Jones, Henry & Williams, Toledo; Vice President—Raymond Fuller of Burgess & Nipple, Columbus, and Secretary-Treasurer—Fred Limbert of Hatch, Samborn and Steketee, Toledo. The officers of the Functional Group have acted as ex officio members of the Executive Committee of the subgroup.

With the money provided by the principals, the group obtains additional services from OSPE. The Society prints and mails the *Consulting Engineers News Letter* published irregularly, but at least quarterly. Other mailings are made to the consultants which contain material for their study such as requests for legislative action and material to be published by the group.

The principals' group has also undertaken an ambitious program of public relations. A general brochure is now off the press and being distributed. This 12-page booklet contains the "who, why, where and how" discussions on consultants. This is to be followed up with smaller more specific flyers to educate prospective clients on consulting engineers.

Shown at a meeting of the Functional Group are, l.-r.: Harold A. Kelley, chairman; Russell Harvey, past secretary, and Carl Schoenbaum, past chairman.

Society or Association

The awakening of the consultants to the need for a unifying organization has raised the question of the type of organization that will best serve the interests of all consultants.

Much thought has been given to three general types of organization; these are:

1. A group within the major technical societies.
2. An independent organization of consulting engineers.
3. A group within the Society of Professional Engineers.

The major points concerning a group or groups within the major technical societies are:

1. These societies are primarily technical whereas the consulting engineers need a professional society.
2. The consulting engineers need one society to speak for them on professional matters. There are consultants in every technical field and no one technical society could represent them.
3. A federation of societies cannot do an effective job due to the remote connection with the individual engineer.

The major points concerning an independent organization of consulting engineers are:

1. This type of organization would be in a position to devote its entire time and energies to the problems of consulting engineers.
2. Since the potential membership in this organization is very small, they may not have sufficient funds to properly staff the type of organization needed by consulting engineers unless dues are exorbitant.
3. Engineers recognize the fact that there are too many engineering societies now. The formation of new ones will cause further splintering of the profession.
4. Due to its small membership this type of society would have limited influence in matters of public opinion and legislation.
5. An independent national organization of consulting engineers could result in a barrier being erected between the professional employer and the professional employee. This could foster the development of the so-called professional engineering labor unions, and destroy any chance of achieving unity in the profession.
6. A consulting engineering organization would be primarily an employer group. Any policy statements would be subject to attack by the public on the grounds that the position taken by the group was motivated by "selfish interests."
7. As consulting engineers, we do not need and do not want a "trade association" type of organization. True, as doctors and lawyers and other professional groups, we have business interests, but they are only a part of the larger and more important professional considerations.

The case of the Society of Professional Engineers could be summarized as follows:

1. SPE is a professional organization whose entire membership consists of professional engineers. Its major concern is the professional status of engineering.
2. The Society is actively working for the unity of the profession.
3. The Society with a membership in excess of 45,000 has already achieved recognition as the only professional engineering society devoting its entire efforts to the professional aspects of engineering. Its status would carry considerably more weight and prestige than that of a smaller consulting engineering group.
4. SPE membership is composed of professional engineers including both the employees and employers. This fact makes SPE policy statements generally acceptable to the public as representing the views of the profession.
5. The composite membership of

(Continued on page 40)

President's Committee Ends Three Years of Study

This Report

In April, 1955, a special interdepartmental committee under Arthur S. Flemming, then director of the Office of Defense Mobilization, submitted a report to President Eisenhower concerning the scientific and engineering manpower situation in the U.S. The President's Committee on Science and Engineering was established as a result of a recommendation in that interdepartmental report. Three years of activity ended at the close of 1958 as the Committee, under the chairmanship of Dr. Howard L. Bevis, made its final report to the President. The AMERICAN ENGINEER presents a summary of this report as a special service to its readers.

The activities of the President's Committee on Scientists and Engineers have, in the main, been directed toward four broad goals:

1. The improvement of science and mathematics instruction in the elementary and secondary schools and the awakening of student interest in science and mathematics courses and in science and engineering careers.

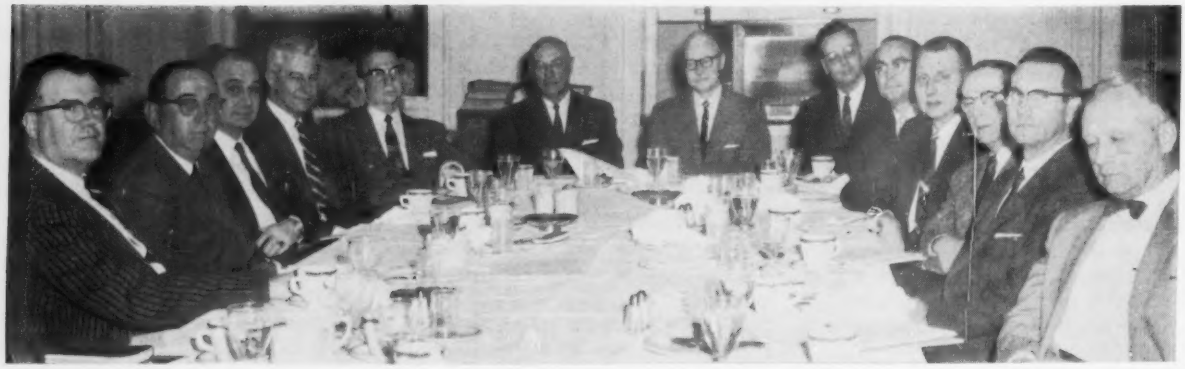
2. The expansion and diversification of post-secondary education, with special attention to the development of technical institutes and those programs of junior colleges which will improve the quality and increase the number of technicians.

3. The more efficient utilization of scientists, engineers, and technicians.

4. The fostering of better public understanding of the scientific manpower problem, and support for the action required for its solution.

Committee Programs

Local Action—A task force Local Action Committee was set up under John S. Coleman, of the National Academy of Sciences, to stimulate the formation of local citizens committees composed of representatives from industry, education, professional societies and civic organizations—all working toward the improvement of science and mathematics education. A promotional kit entitled "Getting Things Done Through Local Action" was widely distributed. It contained suggestions for organizing local committees, reference material on scholarships and improvement of science curricula, and a bibliography of selected materials on methods of organization, visual aids, and other publications helpful in developing a community program. Requests for this printed matter were received from all parts of the country as local action groups came into being. A monthly Local Action Newsletter with a circulation of some 3,000 was regularly mailed. Extensive cooperation in publicizing and organizing



The General Planning Committee for a utilization conference held at the University of Kansas City are shown, l.-r.: Dr. Jack W. Murphy, administrative assistant to chancellor, University of Kansas City; Dr. Max Thornton, Midwest Research Institute; Dr. Joseph C. Shipman, Linda Hall Library; Melford E. Monsees, chief, Program Development Branch, U. S. Army Engineer District, Kansas City; C. G. Roush, Westinghouse Electric Corp.; N. T. Veatch, Black & Veatch; Dr. Richard M. Drake, chancellor, University of Kansas City; Dr. Robert T. Howard, chairman, Department of General Engineering, University of Kansas City; David J. Stewart, Evans Electrical Construction Co.; Ray B. Luhnow, Jr., Burns & McDonnell Engineering Co.; James T. Bennett, chairman, Engineering Department, Junior College, Kansas City; L. S. DeAtley, Thompson-Hayward Chemical Co., and N. L. Miller, Kansas City Power & Light Co.

local groups interested in improved science and math training was achieved through the National Association of Manufacturers, the National Science Teachers Association, the U.S. Chamber of Commerce, the National School Boards Association, and many other organizations.

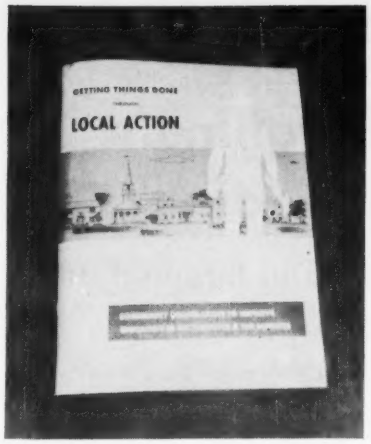
The Local Action program was centered around these objectives:

1. A general strengthening of academic programs and curricula is necessary to insure America's continued leadership.
2. The improvement of teaching and teacher qualifications must include all subject areas.
3. The student must be helped and encouraged to utilize his educational opportunities to the full extent of his capabilities and to develop a lasting appreciation of academic and intellectual achievement.
4. A coordinated effort must be made to develop better public understanding of and continuing support for the schools.

Guidance and Counseling—The Committee developed a guidance kit entitled "Counseling High School Students on Careers in Science and Engineering." A conference sponsored by the American Association for the Advancement of Science recommended that the kit be sent to every high school in the United States, and to junior high schools, junior colleges, and state departments of education. The Committee also sponsored National Science Youth Month in October of 1957 and 1958.

Utilization Conferences—A task force on utilization was organized as the most direct and practical way of enlisting industry cooperation in a manpower conservation program. The task force decided to encourage and assist local conferences and clinics based on two major objectives:

1. To provide a forum for the exchange of ideas among representatives of industry, government agencies, engineers and scientists, and educational institutions on the subject of utilization of scientific and engineering personnel and technicians.
2. To stimulate self-criticism and subsequent remedial action by conferees having manpower responsibilities.



"Getting Things Done Through Local Action" was the title of this widely distributed promotional kit prepared by the Committee.

Four pilot conferences were held in 1957 at Charleston, W. Va., Houston, Boston, and Denver under the sponsorship of local groups organized by deans of engineering and state officers of the National Society of Professional Engineers. The success of these four sessions led to a total of nineteen conferences by the end of 1958. To date, twenty-two conferences are scheduled for 1959. A survey of follow-up information received by the Committee indicates that about one-third of the employers represented in the conferences have taken concrete action to improve utilization within six months of the meeting.

Average attendance at the conferences ranged from 100 to 150. The largest attendance was 343 at Omaha. The majority of the conferees were from top or middle management. Active assistance in the program was given by Paul H. Robbins, NSPE executive director, and by the executive secretaries of the Engineering Manpower Commission and the Scientific Manpower Commission.

The following factors were emphasized in the conferences:

1. Employer representatives suggested that greater stress should be given to company and university-sponsored training programs. More firms are examining the possibility of paying tuition costs for employees interested in studying for advanced degrees.
2. The importance of environmental features was thoroughly discussed. It was felt that personnel programs could be improved by encouraging scientists and engineers to attend professional society meetings and to prepare and publish papers in their specialties, and by providing more stimulating work experience through a variety of professional assignments.
3. A re-appraisal of incentive systems for scientists and engineers with a view to making such systems more equitable and effective was also thought to be indicated.
4. Salary levels were discussed and a number of firms indicated that they would explore the possibility of establishing parallel pay structures for those scientists and engineers who were not interested in administrative work so that they might make financial progress in their professions comparable to those who assumed administrative duties.
5. The conferees were generally impressed by the desirability of using more technicians on the engineering and scientific team. Many representatives undertook to look into the ways and means of increasing the use of technicians.

In follow-up surveys, the participating firms reported that they had: delegated non-professional duties to technicians and clerical employees; trained technicians; recruited more technicians; set up a program of equitable recognition; given greater voice in management

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NSPE Charges Enrollment Figures Are 'Misleading'

• Board Meeting Held in Birmingham

• Hawaii, Maine, Oregon Affiliate

The Board of Directors of the National Society of Professional Engineers, bolstered by three new societies, Hawaii, Maine, and Oregon, held its winter meeting in Birmingham, Ala., February 19-21.

Among the highlights:

• A charge of "misleading emphasis" on figures showing a decrease in freshman engineering enrollment was made by the Society against the U. S. Department of Health, Education and Welfare.

• After hearing a report on current unity discussions by NSPE Past President Garvin H. Dyer, chairman, Inter-Society Relations Committee, the Board also heard reviews on the subject by Glenn B. Warren, president, American Society of Mechanical Engineers, of Schenectady, N. Y., and W. Brownlee, member of the board of directors of American Institute of Electrical Engineers, of Birmingham, Ala.

NSPE President Clark A. Dunn, Stillwater, Okla., reports on first six months at Society's helm.

Clark A. Dunn, Stillwater, Okla., president of the National Society, presided at the opening session during which he and Executive Director Paul H. Robbins commented on present programs.

Later the organization criticized an interpretation of a freshman engineering enrollment report as made by HEW Secretary Arthur S. Flemming. The Secretary's conclusions regarding an eleven per cent drop in freshman engineering enrollment was characterized as "a failure to take into consideration other factors about current trends in engineering education."

The Society cited the increase in competence of students enrolled in engineering, the increase in engineering graduate study and in the technical institutes, and better engineer utilization as factors which are relevant to an interpretation of engineering school enrollment statistics.

In his presentation on unity activities, Committee Chairman Garvin Dyer stressed that a new kit of information on the subject for the use of state societies and local chapters was now ready for distribution.

"It is believed that this comprehensive kit will do much to remove the confusion and misunderstanding regarding unity, and will greatly assist the state societies and chapters . . . ," Chairman Dyer said. "If each state committee will immediately take the steps outlined in the kit for state level action and, at the same time get corresponding committees in action at the chapter level, real progress toward unity of the engineering profession can result."

In other action, the Engineers-in-Industry Subcommittee told the Board that the Kearns "Freedom of Association" legislation has been reintroduced in the House with NSPE backing. Indications are that Congress will deal with substantive amendments to the Taft-Hartley Act this year, and the Society is prepared to testify on behalf of the Kearns bill as an amendment to the present law. This provision will clarify the status of the "sounding board" nonbargaining professional organization by making it clear that such professional organizations are not "labor organizations" under the law.

NSPE President Clark A. Dunn, left, chats with Past President Garvin H. Dyer, center, and banquet speaker Arthur V. Wiebel, president, Tennessee Coal & Iron Division, U. S. Steel Corporation.

The Interprofessional Relations Committee reported that forms of agreement between engineers and architects have now been printed and are available. These are the

Professional leaders take time out from unity discussions to talk engineering materials. Shown, l.-r., are: Glenn B. Warren, president, ASME; W. R. Brownlee, member of the board of directors, AIEE; NSPE Past President Garvin H. Dyer; John Little, vice president, ASME, and NSPE President Clark A. Dunn.

forms in which the engineer is the principal and they are available at $.25 each for less than twenty-five copies; $.15 each in lots of 26-100 copies; and $.10 each for all over 100 copies.

The Ethical Practices Committee asked the Board to approve the following definition: "Competitive bidding for professional engineering services is defined as the formal or informal submission, or for receipt, of verbal or written estimates of cost or proposals in terms of dollars, man-days of work required, percentage of construction cost, or any other measure of compensation whereby the prospective client may compare services on a price basis prior to the time that one engineer, or one engineering organization, has been selected for negotiations. The disclosure of recommended minimum or median fee schedules prepared by various engineering societies is not considered to constitute competitive bidding." The definition was approved by the Board of Directors.

In still further activity, President Dunn told the Society that "Professional engineers employed in the construction industry may lose the separate election rights now guaranteed by the Taft-Hartley Act if Congress acts favorably on a bill now before the Senate Labor Committee."

The head of NSPE pointed out that the Kennedy-Ervin bill, although a labor reform measure, "could operate to force professional engineers employed by construction contractors to be represented or join a heterogeneous labor union without being granted a separate election to determine their wishes."

He called for "immediate action on the part of the engineering profession to inform members of Congress about the consequences of destroying the safeguards for the rights for professional employees."

The Functional Section for Engineers in Private Practice held an all-day meeting prior to the Board session. Among the major actions taken was a further contribution of $2,000 to the American Thrift Assembly, from funds contributed by consulting engineers. The additional contribution makes a total of $4,000 from the consulting engineers for 1959 operations of the ATA, the coordinating body to secure enactment of the Keogh-Simpson bill favoring self-employed retirement plans.

The task force on fees, headed by Frank Sanford, Jackson, Mich., submitted a final draft copy of a revised manual of fees. The document will be published by the functional section as a general guide to consultants in evaluating fees. A report of the Budget Committee, headed by A. C. Kirkwood, Kansas City, Mo., was presented by NSPE Vice President Eugene L. Easley, Indianapolis, Ind. The report dealt with needs of the Functional Section for financing future activities. It was received for additional study. The task force on liability insurance, headed by Arlow Ferry, Kansas City, Mo., reported further refinements in the liability policies.

Other subjects receiving attention were the function of the section on the coordination of ethics, proposed functional section manual, resolution on further use of consulting engineers in the highway program, and a proposal for a national directory of engineers.

The Engineers - in - Government Practice Functional Section also held a separate meeting prior to the Board sessions. The group, headed by Leonard N. White, Little Rock, Ark., firmed up plans for its special program at the New York annual meeting next June,

Sam Hawkins, Denver, Colo., chairman, Constitution and Bylaws Committee, tells the Board of his committee's recommendations.

and acted favorably on a Presidential proposal for a high-level study of Federal personnel policies and structure. Such a study will deal

Kinfolk? No, but the name's the same. Belton Y. Cooper, left, Birmingham, Ala., chairman of the Publicity Committee for the winter meeting, chats with Harry P. Cooper, Lake Jackson, Tex., chairman of the Engineers-in-Industry Subcommittee.

with the place and status of professional engineers in the Federal service. The Functional Section said the proposed study could provide an opportunity for NSPE to further press for the development of a separate schedule and pay plan for professional employees. The group also endorsed legislation to equalize retirement benefits for engineers in the Public Health Service. Both proposals were approved by the Board.

The Board received an oral report on the status of "Project Ambassador," which would send a member of the Society and his wife on a foreign tour. The winner of the honor, who is being selected as a result of the recent fund drive, was not named at the meeting as previously announced but will be selected in time for the June Silver Anniversary meeting in New York.

The engineers and their ladies were lavished with much Southern hospitality by their hosts, the Alabama Society of Professional Engineers. A gala social program culminated in a banquet during which Arthur V. Wiebel, president, Tennessee Coal & Iron Division, United States Steel Corporation, made the principal address.

Frank G. Doar, president, Alabama, SPE; Leonard S. Woody, president, Birmingham Chapter; W. C. Reynolds, Jr.; Harold H. McFaden, and Mrs. Keller Weaver, cooperated with their respective committees to make the meeting a success.

Engineers' Week Observed; Spotlight on 'Space Age'

Exhibits, career conferences, and speeches with a "space age" theme were held throughout the country as part of the observance of the 1959 National Engineers' Week.

The ninth annual program under NSPE sponsorship brought tributes to the profession in the form of proclamations by state governors and city officials, through panel discussions on radio and TV, and through many other activities.

The theme for the 1959 Week, "Engineering . . . for the Age of Space," was illustrated on the covers of a number of engineering and technical journals, and was mentioned in a good share of the several thousand newspaper clippings on the Week received to date by the National Society.

In Springfield, Illinois, the Capital Chapter heard Dr. R. D. Clark, of McDonnell Aircraft Corporation, speak at the Engineers' Week dinner on the subject of "Space Travel Engineering." The Reading Chapter of the Pennsylvania SPE heard Lt. Col. Benjamin H. Ferer, USAF, speak on "Space Research and Progress."

Down in San Jacinto, Texas, the local chapter heard Dr. J. W. McRae, vice president of American Telephone and Telegraph Company, speak on "Science, Engineers, and Society." C. G. Roush, Westinghouse Electric district manager, spoke at a Tulsa, Oklahoma, Chamber of Commerce meeting on the subject of "Living With Tomorrow." The space theme was emphasized in Delaware when Kurt R. Stehling, chief, Vanguard Rocket Group, spoke at the Engineers' Week banquet of the Delaware SPE.

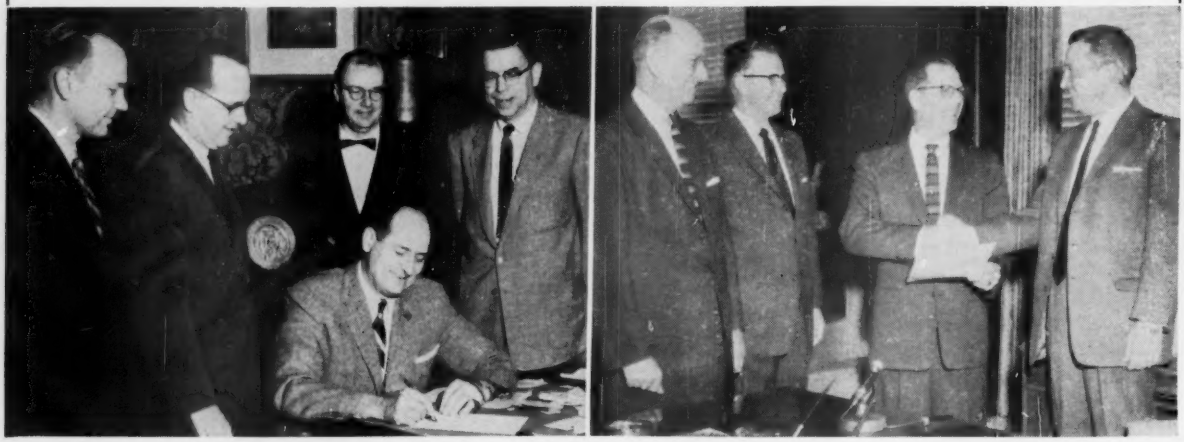
In San Diego, the local chapter named J. R. Dempsey, vice president and manager of Convair Astronautics, as Engineers' Week chairman. A total of twenty-eight organizations cooperated in the sponsorship of Engineers' Week in the San Diego area.

The St. Louis Chapter of the Missouri SPE obtained a proclamation for the Week from Mayor Raymond R. Tucker, himself an engineer. The St. Louis group achieved what would appear to be "blanket coverage" for the Week on radio and TV stations. KSD-TV used the one-minute TV films, and the sound track for the films was used on radio station KSD. Station KXOK used approximately 120 spot announcements during the Week. Local stations also used the TV slides, and presented several special programs involving engineers.

The rotunda of the St. Louis City Hall was the scene of an en-

All state and local Engineers' Week committee chairmen should send a complete report to the National Society headquarters, 2029 K Street, Northwest, Washington 6, D.C. The reports should include newspaper and magazine clippings, photographs of exhibits, listings of radio and TV programs, and any other information concerning the events of the Week. The reports are used in planning for future Engineers' Week projects.

Engineers' Week Proclamations Signed



Left Photo: Governor Albert D. Rosellini signs an Engineers' Week proclamation for the State of Washington. Standing behind him are, left to right, John R. Carrell, William N. Pauley, Robert H. Lochow, and John R. Wallace, Jr., all officers of the Washington Society of Professional Engineers. Right photo: the Mayor of Houston, Texas, Lewis Cutrer, right, presents a proclamation on the Week to Carrington Mason, San Jacinto Chapter president. Looking on, left to right, are C. G. Albert and Jack L. Battle.

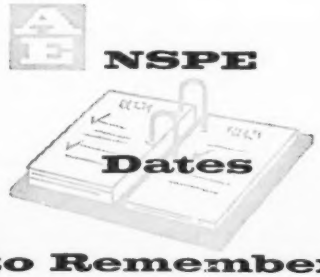
1959 EW Display

Samuel E. Neely, left, chairman of Engineers' Week activities for the Potomac Chapter of the Maryland SPE, looks over a display of the Navy's Strato-Lab program exhibited in the Washington, D.C., area. At right is Dr. G. R. Tatum, president of Vitro Laboratories, Silver Spring, Md., the firm which prepared the exhibit.

gineering display from various city departments. Rocket and jet aircraft models were featured in other displays throughout the city. A model railroad bridge was displayed in Union Station.

The Sunday, February 22, issue of the *Dallas Times Herald* carried a special tabloid section on engineering. The section had articles on the purposes, functions, and importance of engineers in our modern society, and articles on the various engineering organizations. Dallas P.E.'s spoke before the eighteen Toastmasters Clubs of that city, and other engineer speakers were heard by a number of civic groups.

The United States Steel film, "Mackinac Bridge Diary," was shown to all the high schools in the eight-county area covered by the Tullahoma Chapter of the Tennessee SPE. It was also shown to a number of civic clubs. Dr. Gilford G. Quarles, chief scientist at Redstone Arsenal, was the principal speaker at the Tullahoma Chapter banquet February 24. Tullahoma residents had a chance to view engineering exhibits all during the Week at the National Guard Armory.



to Remember

Ohio Society of Professional Engineers—Annual Meeting, March 19-21, 1959, Commodore Perry Hotel, Toledo, Ohio.

Nebraska Society of Professional Engineers—Annual Meeting, March 21, 1959, Sheraton Fontenelle Hotel, Omaha, Nebraska.

NSPE State Presidents' Conference—April 3-4, 1959, Memorial Union, Purdue University, Lafayette, Indiana.

Wisconsin Society of Professional Engineers—Annual Meeting, April 10-11, 1959, Schroeder Hotel, Milwaukee, Wisconsin.

Florida Engineering Society—Annual Meeting, April 22-25, 1959, Robert Meyer Hotel, Jacksonville, Florida.

Illinois Society of Professional Engineers—Annual Meeting, April 30-May 2, 1959, Rockford, Illinois.

National Society of Professional Engineers—Annual Meeting, June 17-20, 1959, Commodore Hotel, New York, New York.

National Society of Professional Engineers—Fall Meeting, October 15-17, 1959, Penn-Sheraton Hotel, Pittsburgh, Pennsylvania.

Many Firms to Exhibit At 25th NSPE Meeting

"Exhibitors are urged to make reservations as soon as possible if they plan to be represented at the 1959 Engineering Progress Exposition held in conjunction with NSPE's Silver Anniversary meeting, June 17-20, in New York City."

That is the latest word from Franklin J. Johnson, committee

". . . make reservations as soon as possible . . ." Chairman Johnson.

chairman for the Society's 25th annual session this summer. He added further that "companies should make exhibit application *now* if they hope to obtain prime space."

Mr. Johnson stated that twenty-two firms have already contracted for exhibiting space in the Hotel Commodore including, Air Conditioning, Inc.; Allis-Chalmers Manufacturing Co.; American Vitrified Products Co.; The Babcock & Wilcox Co.; Philip Carey Manufacturing Co.; The Bilco Co.; Cobon Plastics, Inc.; Cyclotherm Division, U. S. Radiator Corporation; Ebasco Services, Inc.

Expanded Clay & Shale Assoc., Inc.; Friden, Inc.; General Electric Co.; Kern Instruments, Inc.; The Korfund Co., Inc.; Marlo Coil Co.; Raymond International; Royal-McBee Corp.; The H. B. Smith Co., Inc.; Spencer, White & Prentis, Inc.; D. B. Steinman; Taylor Controls, Inc., and Tubular Products, Inc.

The New York State SPE, the host group for the meeting, reports that program plans are rapidly being completed and will soon be announced.

This Month's Authors . . .

Mr. del Rio

Daniel A. del Rio, New York representative of Banco Nacional de Cuba, was associated with the Hanover Bank (New York City) for thirty-two years, more than a third of which were spent as its vice president in charge of operations in Latin America, Spain, and Portugal. During his tenure with the Hanover Bank, Mr. del Rio was a director of several Latin American Chambers of Commerce and, even today, retains a directorship in the Pan American Society and in the Cuban Chamber of Commerce.

Mr. del Rio is a founder of the Bolivarian Society of the United States, acting at the present time as its Honorary President.

In addition to acting as the representative of Banco Nacional de Cuba, Mr. del Rio also is the New York representative of Banco Nacional de Descuento, Caracas, Venezuela.

△ △ △

Dr. Finkelhor

Dr. Dorothy C. Finkelhor is the founder and president of Business Training College, Pittsburgh, Pa. A native New Yorker, she studied at Duquesne University and earned her doctorate at the University of Pittsburgh, where her thesis on the *Occupational Adjustments of Beginning Office Workers* won her the Phi Epsilon National Award.

Dr. Finkelhor has successfully managed a career as an educator, business woman, author, and lecturer. She has written a book entitled *How To Make Your Emotions Work For You.*

△ △ △

Mr. Kelley

Harold A. Kelley is a partner in the consulting engineering firm of Jones, Henry & Williams, of Toledo, Ohio. He received a B.S. degree in civil engineering from the University of Arkansas in 1950 and was awarded a citation from the Arkansas SPE for being the most outstanding graduate from Arkansas schools.

Registered in Ohio, Michigan, Kansas, and Missouri, Mr. Kelley is chairman of the Consulting Engineers of Ohio, a Functional Group of the Ohio SPE. He is also president of the Principals of Consulting Engineers of Ohio, a subgroup of the Functional Group; vice president of the Toledo SPE, and member of the Task Force on Fee Schedules of NSPE's Functional Group for Consulting Engineers in Private Practice.

CONSULTANTS

(Continued from page 33)

SPE consisting of professional engineers in industry, construction, government, education, public utilities, and consulting engineering makes it difficult for the Society to devote sufficient time to the exclusive problems of consulting engineers without neglecting the interests of other members.

The problems of the consultants are confined to two fields—technical and professional. The technical societies provide good sources for the needed technical assistance and guidance.

The Society of Professional Engineers appears to be the best organization for solving professional problems. The consultants have many professional problems in common with all engineers, and it is to their advantage to maintain and even strengthen the Society of Professional Engineers.

It would appear that the logical place for solving all professional problems is within the Society of Professional Engineers. The one drawback, lack of concentrated effort, can be overcome by consultants themselves. The Society will furnish the framework, guidance and assistance and the consultants can concentrate on their peculiar problems through functional group activity.—**End.**

SCHOOL

(Continued from page 29)

high-echelon officers now required to staff the usual office operations.

The BTC engineering secretarial program is currently being reviewed by the Office of Defense with a view toward possible inclusion in the training for national defense. Literature, officially endorsed by the Pentagon, will soon pour into all U. S. continental bases, aimed at commanding officers and their training directors.

MEANWHILE, surveys are being conducted to determine specific needs and requirements of the military. Time and availability of personnel are some of the problems. Example: the military suggests the program be specially condensed for their own personnel into (1) one year; (2) evening school; (3) cycles of three months for various sections of the course; or, (4) three months training, return to government post, then later assignment for another cycle of training.

It is interesting to note that BTC's engineering secretarial program was initiated and developed by free enterprise, in the area of private school education without state or Federal subsidization. Also the need for this course was discovered by the private school field prior to the hour when the President called for new science developments and thus sparked greater interest in engineering and science education. While many phases of education and research are backed by state and Federal funds, BTC's program, which of necessity, must share in the national defense effort, was created entirely within the realm of individual effort and initiative, financed through enrollment fees from the registrations alone.

BTC, accredited as a junior college of business, has been a recognized pioneer in the business education field. With the engineering secretarial program as its latest endeavor, BTC can now present industry with highly-skilled personnel, able to step confidently into any engineering office in the world. —**End.**

By Mrs. Garvin H. Dyer, Chairman of the Ladies Auxiliary Advisory Committee.

Congratulations go to another fine group of women who have organized an auxiliary. The wives of the Bartlesville, Okla., Chapter met at the Bartlesville Women's Clubhouse in January and organized an auxiliary with forty-nine charter members. Mrs. L. G. Wieneck was elected president. The Oklahoma Society held its annual meeting on January 30-31 in Tulsa, with the Tulsa Auxiliary providing a very interesting and entertaining program for the visiting ladies.

We are receiving splendid reports from other newly organized auxiliaries. The St. Louis Auxiliary held its first regular meeting in January, with Beulah Schacht giving her hilarious talk "One Darn Thing After Another" as the program. Sixteen new members were added. A project was initiated for a scholarship fund, with the proceeds from a card party held at the home of the president, Mrs. Frank E. Wenger, on January 30 to go into the fund. This group is certainly to be congratulated as many auxiliaries do not have such an ambitious project after several years of operation.

The Southeastern Chapter of the New Mexico Auxiliary is meeting regularly coincident with the men's meeting. This Chapter covers an area of several hundred miles, so attending a meeting entails a long drive for most of the members.

Mrs. Noel Tweet, president of the South Dakota Chapter, was a recent guest of the Western Chapter of Missouri Auxiliary at their regular meeting in January. The program consisted of a book review by Mrs. Lloyd White "The Form Divine." This auxiliary now boasts a membership of 132. They held a Valentine Day card party at Blue Hills Country Club in February.

Many auxiliaries are holding elections at this time of year, and you are all urged to send new officers names' and addresses to your area chairman.

Among interesting projects reported is the one of the Central Arizona Chapter Auxiliary, where each member is to "raise five"—dollars, that is, in some original way. Some made and sold Christmas gifts, some culinary specialties—plum puddings, candy and even corn tamales. The money raised was presented to the men's group at the banquet during Engineers' Week, to be used for their student loan fund.

Among the many auxiliaries assisting in Engineers' Week was the Amarillo, Texas, Chapter, who does the publicity for the parent chapter. This auxiliary has an annual project of adopting a needy family at Christmas. They report an active membership of forty-eight.

35th Anniversary

Past NSPE National Director A. Burton Metzger and his wife Marylyn are shown cutting a four-tier wedding cake at their thirty-fifth wedding anniversary recently in Albuquerque, New Mexico.

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COMMITTEE

(Continued from page 35)

to scientists and engineers; outlined specific duties of professional personnel; revised the interviewing system for professional personnel; provided in-service training; transferred qualified engineers from drafting board operations to professional tasks; reassigned engineering personnel, after special training, to group supervisor responsibilities; initiated individual studies toward improved utilization, and made an evaluation of the entire utilization sphere as related to a particular organization.

The local utilization conferences held under the auspices of the President's Committee aimed to promote the establishment of conditions which will be conducive to the best creative and productive professional effort on the part of scientists and engineers. Through the utilization conference program, the Committee believes that significant progress has been made, in a realistic way, to improve the conservation of scientific and engineering manpower.

Technicians—One of the first actions of the President's Committee was to set up a Working Committee on Technical Support for Scientists and Engineers under the chairmanship of Karl Werwath, president of the Milwaukee School of Engineering. This group estimated that we are now graduating less than one-sixth of the required number of highly skilled scientific and engineering technicians through accredited or approved courses in the United States. The President's Committee has encouraged industry to meet its current needs for technicians by reviewing its recruiting policies and job assignments, by establishing a systematic upgrading program, by recruiting and training women technicians, and by providing refresher courses and regular classroom work as a part of on-the-job training. These and other suggestions for locating and making the most effective use of technicians are outlined in a committee booklet entitled "Answer Your Engineering Manpower Problems," of which more than 25,000 copies have been distributed.

Statistical Task Force—The inadequacy of data on many aspects of the scientific manpower question was one of the most persistent difficulties encountered by the Committee. A Statistical Task Force was established by the Committee in 1957. Collaboration with the National Science Foundation resulted in a report entitled "A Program for National Information on Scientific and Technical Personnel." This report suggests fifteen separate data-gathering and research projects.

Conclusions and Major Recommendations—Gearing America's manpower resources to the requirements of the scientific age is not a problem which can be solved and then put aside. It is, rather, a continuous and inescapable social function whose resolution must become an integral part of our way of life. The immediate task before us is twofold: to evolve the patterns and create the social mechanisms which will continually adapt our educational, economic and political systems to the dynamic environment of the latter half of the 20th Century, and to overcome the problems of supply of highly trained manpower, particularly of qualified scientists, engineers and technicians resulting from our failure to anticipate our long-term needs.

The President's Committee on Scientists and Engineers strongly recommends that:

• The Federal Government at the White House level assume the responsibility for coordinating and stimulating the nation's efforts in the development and utilization of highly trained manpower. This responsibility should cover these three areas:

a. The coordination and development of Federal policies with regard to highly trained manpower and the coordination of the many Federal programs which affect the education and utilization of this manpower.

b. The coordination of governmental and private efforts abroad further to develop and better to utilize the pool of highly trained manpower available to us and the friendly nations so as to promote the most effective arrangements for maximum utilization of these resources.

c. The continued close government liaison and cooperation with the great private agencies of our country which educate or utilize this manpower.

• Pending the assumption of full responsibility by a White House agency of these functions, the key programs developed by the President's Committee be continued without interruption as being of vital importance to the further development of the scientific and engineering potential of the country. The Committee feels that it is particularly important to assure the continuing participation of private agencies in both the operating and the coordinating functions for these activities.

• A committee composed of appropriate cabinet members assisted by representatives of other Federal agencies be set up at once to examine the problem and to recommend to the President a suitable White House organization, new or existing, to assume the responsibilities indicated in the first recommendation.

In addition to these major recommendations, the Committee recommends that:

I. Efforts be intensified to stimulate the formation of citizens groups at local, state, and regional levels to improve mathematics and science teaching in our primary and secondary schools, and to interest more of our able youth in these courses.

II. The program to improve the utilization of scientists, engineers, and technicians through conferences of representatives of professional societies, educators, and management be continued.

III. The work begun to improve available information concerning labor market problems of scientists, engineers, and technicians be carried on by the National Science Foundation.

IV. The programs of public information concerning the manpower problem of scientists, engineers, and technicians carried on by private and public agencies be coordinated and intensified.

* * *

Although the President's Committee has ended its official life, staff activities are currently being carried on from the Office of Civil and Defense Mobilization. The utilization and local action programs will be continued at least until the first of July.

The attitude of the Committee toward a continuation of its projects might best be summed up in this paragraph taken from a letter to President Eisenhower included in the Committee's final report:

"Despite progress in the Committee's major projects, only a start has been made on the immense task before us. It would be misleading to the American public and a disservice to the nation to leave the impression that the termination of the Committee means that the job has been completed. Much progress has been made in establishing working groups throughout the country and in the parallel task of creating public awareness of the problem. These efforts have, of course, been greatly helped by the attention focussed on science and science education by news of the satellites. Nevertheless, it is doubtful whether the sudden spurt of public interest during the past year has created enough conviction about the seriousness of our manpower problem to provide a sound and lasting basis for the formulation and execution of a comprehensive national policy to deal with it. Neither the demands which the rapid technological developments already clearly foreshadowed will make upon our intellectual resources, nor the broad implication of world-wide technological competition seem to be fully appreciated."—**End.**

Thoughts on Professionalism...

By **PAUL H. ROBBINS, P.E.**
NSPE Executive Director

Engineering Enrollments

The public and technical press have noted with varying degrees of interpretation recent statistics released by the Office of Education indicating an 11.1 per cent drop in freshman engineering enrollments. Some have viewed this with great alarm; others have more soberly endeavored to analyze possible reasons for this in the light of the publicity both on comparison with Russian scientific education, and the needs of our nation for engineers and scientists.

Cold statistics always need to be analyzed not only in terms of the actual figures they represent, but in terms of many factors which have bearing upon the comparisons. In the several discussions on this subject, observations have been presented that these figures need additional statistics to indicate the degree to which scientifically-inclined students may be entering other scientific disciplines; the number who may be transferring to engineering schools in later years, either from junior colleges, liberal arts, or three-two schedules; and the degree to which the colleges have been more selective in the current freshmen class. Engineering circles are also discussing the extent to which the economic recession in the spring of 1958 may have affected both freshman and graduate enrollments last fall. In some areas there is a feeling that this had a sizable impact on students. In other areas there is the feeling that other factors played a greater role. The conclusion should, of course, not be drawn that because there are fewer freshmen in 1958 there may be fewer college graduates in 1962. The dean of one engineering college, for example, indicated that for the first time in the history of that school the junior class exceeded the number in the freshmen class—although this is not the national trend—because of transfers and other factors increasing enrollments in the later years of engineering education.

Unfortunately no statistics have been released either as to the number enrolled or the number completing two-year programs at the technician level. It is possible, of course, that some of the students who perhaps might have enrolled in four-year curricula only to be unable, either because of financial reasons or academic standards, to complete the four-year program and thus contribute to the drop-out figures, were, in 1958, enrolled in two-year programs.

An encouraging note in the statistics from the Office of Education is the appreciable increase in graduate enrollments in engineering. These are at the highest levels ever shown at the masters' level and the doctors' level. It is also encouraging to note that the number of advanced degrees given in 1958 was approximately ten per cent higher than in the previous year. It is still disturbing, however, to find that in the entire United States only 647 doctors' degrees in engineering were granted in the school year 1957-58. NSPE has repeatedly said, both in its news releases and in statements to Congress and others concerned with this problem, that while the nation is in need of an adequate supply of four-year college graduates the great deficiencies are at the technician level and the graduate level. If further study of the enrollment figures for 1958 should show that there is a sizable increase in young people studying to be technicians, this supplemented with the noted increase in graduate study will indicate an encouraging orientation of technical brainpower where it can be most effective.

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NSPE State Presidents' Conference April 3-4

The 1959 NSPE State Presidents' Conference will again be held at Purdue University in Lafayette, Indiana. The dates are set for April 3-4 and headquarters will be in the Purdue Memorial Union.

The purpose of the conference is threefold: (1) To permit an exchange of state society administrative experiences; (2) To better acquaint the state presidents with professional society philosophy and programs, and (3) To provide state presidents an opportunity to pose questions arising in the state society on which other states may have had experience.

In an official memorandum to all state presidents, NSPE Executive Director Paul H. Robbins stated that it was highly desirable for the person who is to have the responsibilty for state society administration during the 1959-1960 year to attend this conference.

Certificates Presented By Toledo Society

The Toledo Society held a certificate presentation meeting for new registrants. Members and their wives joined the new registrants and their guests for a social hour and dinner before the meeting.

Walter Graf, board member awarded the certificates. Another board member, Charles Hatch, introduced the main speaker. A former board member, Ben Kesting, was in the audience.

Homer Borton, vice president, OSPE, gave a short talk on advantages of belonging to the professional society.

A. L. McCawley, counsel, Missouri State Board of Registration for Architects and Professional Engineers, presented the main talk.

Deceased . . .

Joseph W. Dawson, of Syracuse, New York, member of New York State Society of Professional Engineers.

J. Di Stasio, Sr., of Belmar, New Jersey, member of New Jersey Society of Professional Engineers.

Lauren A. Gates, of Beckley, West Virginia, member of West Virginia Society of Professional Engineers.

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's EXPANDED Readers' Service Department!

Now it is easier than ever for you to get information f-a-s-t on new products and services. The other side of this page when folded makes a *self-addressed reply envelope* that is all ready to come back to us. All you have to do to use it is to first read the advertisements, and the "Progress in Products" and "New Literature" features in every issue, noting that each makes specific reference to numbers on the form below.

Then if you want more information about any item, simply circle the corresponding number on the form, sign, fold, fasten and MAIL TODAY!

We do the rest. And within days, the data and literature you want is on its way to you.

Take advantage of this FREE service. Use this handy envelope NOW!

March

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.....

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Company Name .....

Address .....

City ..... **Zone** ..... **State** .....

Progress in Products

MASONRY CLEANERS — Item 30

A new kind of brick and masonry cleaner containing sulfamic acid in dry, granular form has been announced. These new type products have the cleaning action of muriatic acid, but offer distinct on-the-job advantages, it is claimed. Packaged in lightweight, nonreturnable fiber drums, they are easy to handle and require no deposits. To make up a cleaning solution, the granules are simply mixed with water at the job site. It is safe for use on metal surfaces.

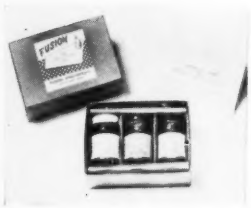
HOLE DRILLER — Item 31

A precision tool which makes small hole drilling simplier, faster and more economical is now ready for the market, according to Hunter Tool. For use on milling machines, jig borers, lathes and drill presses, you simply lock into position and control the drilling pressure with your finger tips. Hunter claims the Small Hole Driller pays for itself quickly because it practically stops drill breakage, and drills stay sharper.

CURING BLANKETS — Item 32

A new product designed to protect freshly poured concrete while curing has been announced. Known as Fiberglas Concrete Curing Blanket, it protects curing concrete from inclement weather and freezing temperatures, it is claimed. It is a fine-fibered, flexible, resilient, felt-like blanket of fibrous glass bonded with a thermo-setting resin, completely enclosed in a tough eight mil black polyethylene film. It controls curing, is easily and quickly put in place, because of its light weight, and is re-usable. The new product allows relatively little water loss and temperature variations during the curing period and is specifically designed for repeated use after rough service.

PRODUCTION KIT — Item 33



An experimental kit of silver brazing pastes (standard silver braze alloys and fluxes in stable combinations)—a new production engineering tool—is now being offered. The kit consists of three separate silver brazing pastes for use in testing production silver brazing applications and for determination of cost reduction and increased production potential. The paste brazing kit allows production engineers to quickly and thoroughly evaluate this process as a production tool.

STENORETTE — Item 34

The DeJUR-Grundig Stenorette is a single unit dictating-transcribing machine, one instrument doing both jobs. In addition, it is light—11 lbs., 10 ozs.—which make it possible for the busy executive to take it home in the evening and bring it back next day for his secretary to use in transcribing. A sturdy machine, it can be used for very long periods of time without servicing, and offers excellent playback at all times—even when it is used as a conference recorder, it is claimed. The microphone functions as a speaker when the dictator wishes to "review" what has been said. There is a full thirty minutes of dictation time on each spool and each spool can be used over and over again. Special "Automatic Voice Control" records and plays back the dictator's voice at a uniform level; that is, low voices are automatically boosted and excessively loud voices are reduced in volume.

MAN-MADE RUBBER — Item 35

A unique man-made rubber, added to a batch of tree rubber, improves the natural product so that it holds air as well as the best synthetic rubber. The rubber, known chemically as brominated butyl, also acts as a base for an adhesive which permits bonding of butyl rubber to metals or other rubbers. Until now, butyl has resisted all attempts to form a strong, practicable bond with other materials. As an adhesive, brominated butyl is expected to find wide use in the manufacture of tires and in the preparation of tie gums required for retreading operations.

HAMMER — Item 36

By suspending the head of this hammer from the handle by energy absorbing materials, Ramset Fastening System has developed a tool which absorbs much of the shock of impact and eliminates much of the fatigue of hammer-in work. The hammer, called "Shure-Drive," was developed for use with Shure-Set, a hammer-in tool for fastening in thin steel, concrete and other hard-to-penetrate materials.

This column describes new products of general interest to professional engineers. For further information, circle the item number in the Readers' Service Dept. and mail to AMERICAN ENGINEER.

These listings are informational and are not an endorsement of the products, nor of the manufacturer's claims.

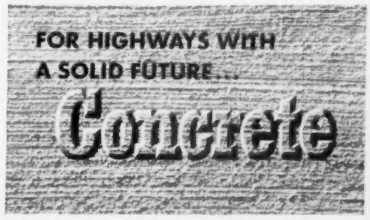
Only CONCRETE roads automatically provide 100% added strength for lasting load-bearing ability!

Laid flat, concrete stays flat. Traffic rides smooth and steady . . . travels fast and far. Modern concrete is the *engineered* pavement . . . designed mathematically to specific wheel load requirements. When you work to accepted design practice, you get a pavement that can support twice the rated axle load . . . a 100% margin of strength.

That's why concrete will stand up not only to rated axle loads in *normal* volume, but even in *peak* volume, with such loads running bumper to bumper . . . and last an expected 50 years and more. Reserve strength like that saves taxes and complaints. It's a big reason why upkeep costs will run as much as 60% lower than for flexible pavement.

Concrete often saves money in other ways, too. For example, on the Indiana Toll Road, engineers drew up designs for both types of pavement, proved concrete would save $9,740,000.

And truckers are the experts who can tell you that today's concrete means gentle treatment of cargoes. It's the flattest, smoothest-riding pavement there is. Small wonder concrete is the preferred pavement for the Interstate System and other heavy-duty highways.



PORTLAND CEMENT ASSOCIATION

A national organization to improve and extend the uses of concrete